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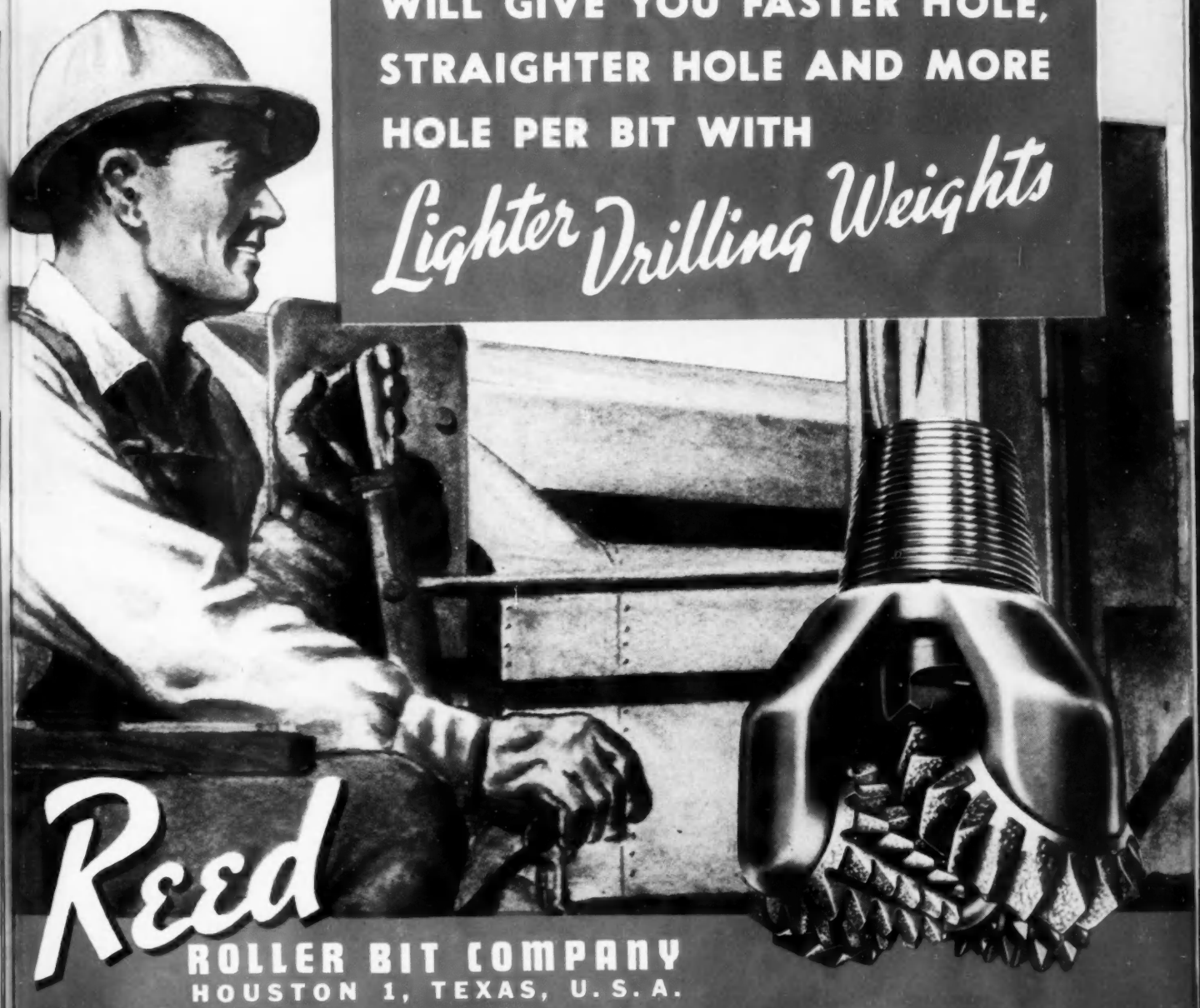

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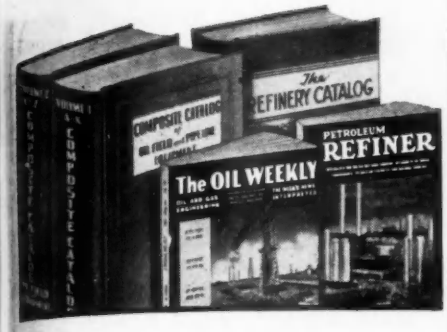

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. . . with the Editor

ALTHOUGH Elk Hills, California, during the past several decades has figured prominently many times in the news, America just now is more nationally conscious of the importance of Naval Petroleum Reserve No. 1 than ever before—for it is being developed after being hoarded for nearly a third of a century. Today it is producing 3000 barrels daily, and soon a new well will be added every 24 hours. In recognition of this increased interest, THE OIL WEEKLY in an early issue will assemble in running story historical and descriptive highlights of the Reserve, so as to make a complete picture.

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CENSORSHIP NOTICE—Censorship rules occasionally make it necessary to tear out or otherwise delete parts of publications destined to subscribers outside the United States. If there be such deletions in copies of THE OIL WEEKLY going abroad, they are at the request of the Office of Censorship. Copies sent abroad face unavoidable delay because of time necessarily consumed in passing the publication through the Office of Censorship.—*The Publisher.*

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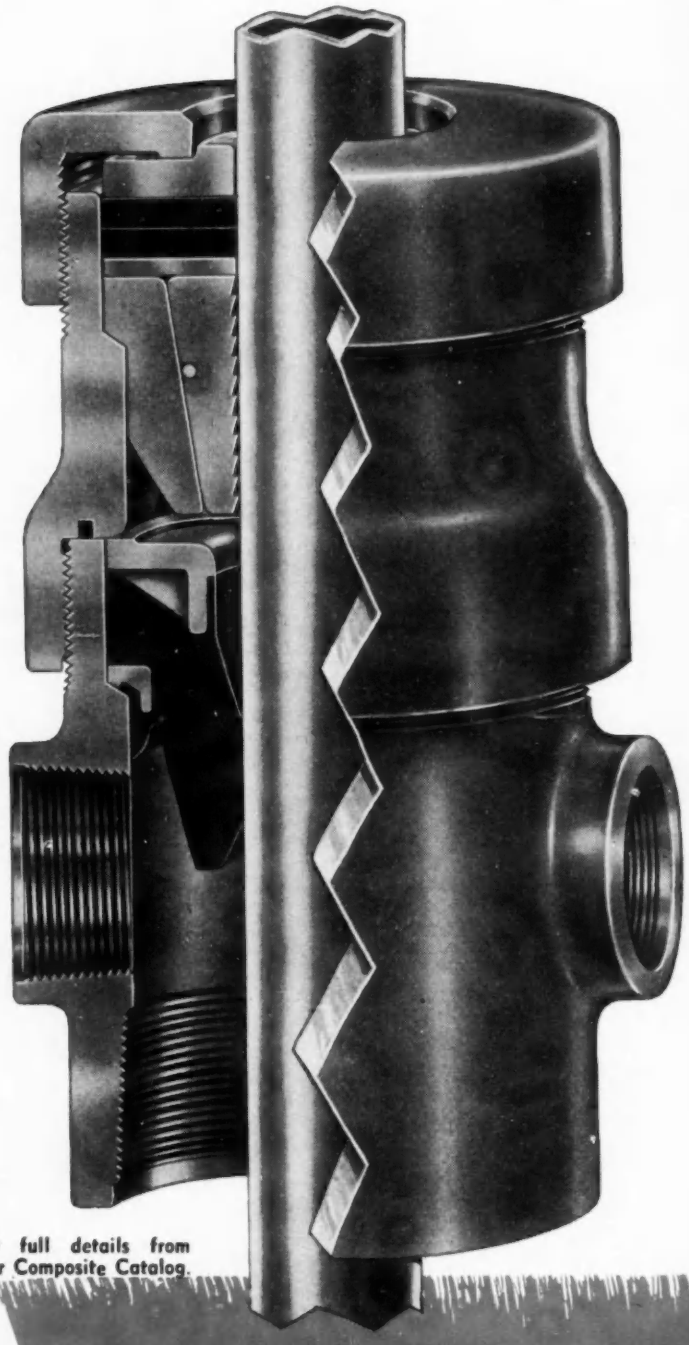

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The Changing Panorama

Killing the Goose That Lays Tax Egg

WHAT a great many politicians and labor leaders do not know about business is that it is in a constant stage of creating, developing and executing new ideas in order that black ink may predominate on the ledger. It is not simply a continual round of spending other people's money, as some seem to think, or filling orders that "pour in to the company."

No American business man worthy of the name of American, begrudges the tax money which is going to help win the war. He goes right along with his planning, knowing that the bulk of the profits from the idea will go to the government in the form of taxes, but he is desperately anxious to see the war won, and his reaction is, as we have heard it innumerable times, "As long as the money goes toward winning the war, O.K., but I would like to see it handled better than it is being handled."

But when the war is over, if the politicians think that the same attitude will be maintained toward paying non-workers, it has another thought coming. Every one we know of seems to be in favor of taking care of the returning soldiers to the very best of our ability —although most men know that mere subsidy will not satisfy them nor do the job. But we have yet to hear a working man or a business man express himself as being willing to help furnish tax money to pay non-working former war workers.

"Most of these people have drawn higher wages than they ever made in their lives," we hear on every hand. "To many of them the war has meant the greatest prosperity they have ever known. They have been paid for what they have done, and have been well paid, too. It is one thing to work and earn tax money to help pay them in wartime and another to raise tax money to pay them when the war is over and their good jobs are gone."

That may not be pretty talk, but it is the talk one hears on every hand. If the Congress attempts to run counter to it it will result in killing the goose which lays the golden tax egg, because the incentive to pay high taxes will be gone.

And because business is, to recall the first paragraph of this article, a continual effort of creative thinking, development and execution to make a little profit here and a little there, destruction of the incentive, or prostitution of the incentive, will kill it.

"Dr. Somerskill shows me where the House f Commons once stood. She hopes it will be left as it is as a constant reminder of what happens when a people elects fools as representatives and when honest men with brains cease to use them. ——It's not that there are not enough big jobs for the big men. There are too many big jobs—there are not enough big men. I think back to that shattered House of Commons. There's a connection between that gaping roof and rubble-strewn floor on which Disraeli once proclaimed an Empire and what I am hearing now. Those ruins are a monument to second-rate men supported by an ill-educated, second-han-thinking electorate."

I. A. R. WYLIE,
Flight To England.

Example Set in War Paper Drive

WITH the paper shortage continuing to pose a problem not alone for publishers of newspapers and magazines but for the general public as well, oil companies and other industrial organizations might well emulate the good example set recently by Cities Service Oil Company which "plowed scrap paper into wartime uses" at its Bartlesville, Oklahoma, offices.

The company salvaged approximately 137,000 pounds of waste paper by disposing of old records which company officials first reviewed and found to be useless. A total of 650 ledgers or books of varying sizes have been discarded into scrap paper drives so far and still further contributions are expected after old records are reviewed. In reviewing old books, company officials found 133 old law books which were donated to the University of Oklahoma.

Millions of pounds of badly needed scrap paper could be salvaged throughout the nation if every business firm took the trouble to follow the example set by Cities Service Oil Company.

The inspirational commentary headed "Things of The Spirit" which appeared in these columns last week was from the pen of Dr. George St. John, headmaster, The Choate School.

Factors in Postwar Producing Rates

REBUILDING of United States petroleum stocks to normal levels will not influence postwar producing rates as much as many have predicted, for the simple reason that two thirds of the wartime stock draft has occurred in California, in the opinion of Dr. Richard J. Gonzales, economist for Humble Oil & Refining Company.

In addressing the Gulf Coast Chapter of the American Institute of Mining and Metallurgical Engineers last week, Dr. Gonzales pointed out that only 29 million of the 90 million wartime draft on petroleum stocks has occurred east of California. "Such additions to stocks," he continued, "as occur in California will influence production only in that area, due to transportation difficulties and price differentials involved in moving oil to the Pacific Coast."

It will not be necessary, he said, "to restore stocks to the 1941 level in order to achieve efficient operating conditions after the war when demand declines, but even if stocks were increased 29 million barrels east of California, that would allow an addition of only 40,000 barrels per day for two years or 80,000 barrels per day for one year."

Lessening the Shock Of Agency Cessation

IN HIS annual address to the Dow Chemical Company, president Willard H. Dow, recently expressed a viewpoint fundamental to successful emergence from a wartime to a peaetime economy. "When the war is over," he declared, "the need for regulations will cease, and even before the war is finished, we should drop such regulations as are no longer necessary for war purposes, for their continuance only delays our transition into the peace."

Every thinking American realizes that the war may be far from won. It is also safe to say that most of our people accept cheerfully any demand necessary to final victory. As Dow says, "We have taken regulations as a necessary part of the war, in much the same fashion as a young man, when inducted, puts away his civilian clothing and gets into a uniform." When the

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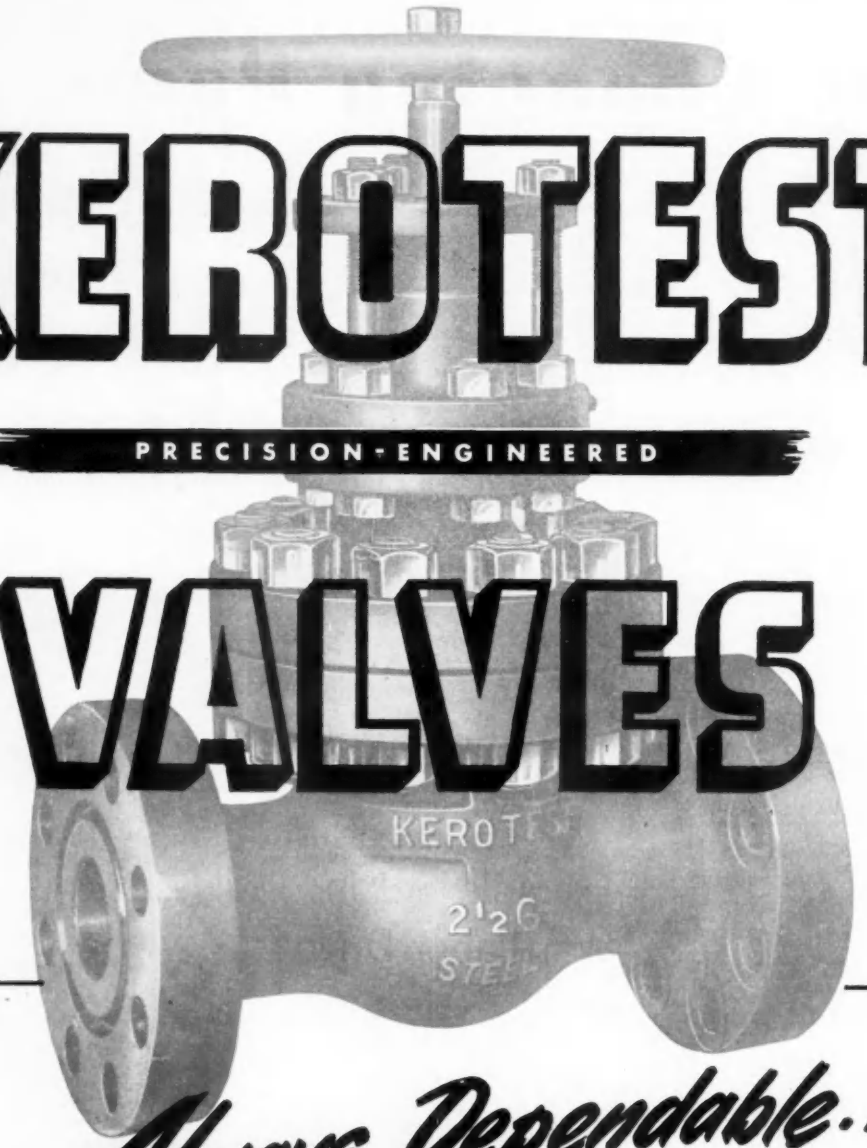

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soldier gets out of uniform, however, he expects to discard it completely, and not have to wear a G.I. shirt with civilian trousers. "There may be a shock," Dow continued, "in suddenly dropping the war controls, but not until every control is removed can we have the free, open and competitive market in which the customer rules. That is the only kind of market that will give us a free and prosperous America. The longer we delay stepping forward into freedom, the greater will be the eventual shock. There is no easy way to get out of what we are now in. Let us meet this question squarely and as Americans and not try to pussyfoot around it."

The oil industry has held largely to the view expressed by Dow. Oil men are not pussyfooters. They have probably been more insistent than most other industry groups that regulations on their industry be relaxed as quickly and as completely as possible. So far the response has been satisfactory. The tendency toward pussyfooting has not yet been evident, and it is to be hoped that no such attitude is encountered. Sympathy between PAW and the industry has, on the whole, been satisfactory. When misunderstandings have arisen they have been quickly cleared away. The industry has taken PAW leaders at their word that PAW is strictly a wartime agency, due for complete and utter liquidation at the earliest possible date compatible with national expediency. Nothing short of this is expected by the oil industry.

Skeletonizing of district office personnel has already taken place in some districts, notably district 3. Resignations have taken place in a number of divisions of this particular office and many of those resigning have not been replaced, without apparent effect upon office functions. It should be pointed out however, that men resigning from these jobs have felt that their period of real usefulness to PAW has passed, and they desired to withdraw from an agency which they felt no longer had a need for them.

As long as the national emergency exists there will be a need for a PAW organization, though naturally its functions will gradually diminish. Capable men are necessary to achieve the remaining objectives, but good judgment calls for reduction of personnel in keeping with lessening of work. If this policy is faithfully followed, final closing out of the agency will not be an involved matter when the war is over.

American industry is comprised of every productive force in this broad land.—IRVING S. OLDS, chairman of the board of directors, U. S. Steel Corporation.

Industry Should Act On Oil Pact Makeup

FEARS of the American petroleum industry that it would not have representation on the United States-British joint petroleum commission have been amply justified, our State Department having announced its intention of naming government officials to all four seats on our side of the table. Men who know the petroleum industry will be given only kitchen chairs in the butler's pantry, where they will be handy to "advise" the diplomatic career boys as to what knives should be used in cutting up the melon.

The decision to deny seats to qualified oil men, according to State Department spokesmen, arises from "the complexities of the industry" in this country, as compared with the "simplicity" of the British setup, whereby their major petroleum interests center only in the Shell and Anglo-Iranian groups.

This is a fatuous argument, to say the least, since it implies that American companies cannot agree among themselves regarding the enunciation of general policies to protect their own interests in foreign operations. There is no basis for such an assumption, the domestic industry for years having operated under proration which has limited production to market demand. Furthermore, such a makeup of the commission would amount to regulation without consent or representation, since the government could easily grab control of the industry and issue "requests" that would be nothing short of orders.

The industry has about two months to do something about the situation, since the International Petroleum Commission is scheduled to begin deliberations early in November with all seats filled. Everything should be done to convince government leaders in Washington that at least two of this country's commissioners should be picked from the American petroleum industry. Otherwise, recommendations of the commission almost necessarily will fall far short of serving the best interests of the American petroleum industry and the American people—in peacetime or wartime.

Government officials promise that the commission will have no jurisdiction over domestic production, nor will it allocate export or import quotas. They insist that with adequate crude oil supplies "the natural relation of supply and demand should take care of the question of fair prices." If this be the naive philosophy of our representatives, then they probably are in for some rough handling by their English cousins.

The situation calls for the employment of our best brains. Otherwise, the deliberations will degenerate quickly into a venture in diplomacy in which the world's petroleum resources will be used as a political tool instead of treating it as a vital world commodity in itself. The latter can be understood only by those who have devoted their lives to its discovery, production and worldwide distribution for use.

Says Industry Needs New Discovery Tools

THE oil industry must find new methods to discover additional reserves or improve present oil-finding techniques if it hopes to maintain the equilibrium between new discoveries and withdrawals, according to Dr. Cecil G. Lalicker, professor of geology at the University of Oklahoma.

According to Dr. Lalicker, oil men in the United States have consistently lost ground by their inability to find oil as fast as it has been used, and cited the trend of lowering reserves in a majority of the larger producing states.

"The discovery of new oil fields is becoming increasingly difficult with the present known methods," he declared. "New tools for discovery of oil reserves will have to be invented or developed if we hope to find new oil as fast as we use it. In using such tools as the seismograph, the magnetometer and the gravitometer, geologists have found many new pools that lacked any surface expression."

Dr. Lalicker pointed out that in California the production of oil is 60,000 barrels a day less than the amount needed by refineries, the deficit being made up from storage which must inevitably become exhausted.

"Since geologists have failed to find as much oil as has been used during the past five years, it is apparent that most of the exploratory tools now in use have reached their limit of utility and new tools and methods must be devised and utilized if we are to get ahead of the game," he said. "Important new oil pools are still to be located but we must recognize the fact that the discovery of new pools, large or small, is becoming increasingly difficult with the oil finding resources now in common use."

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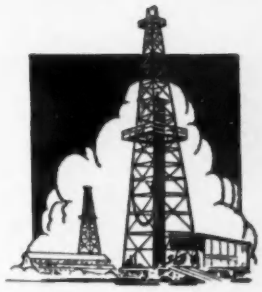


By BERTRAM F. LINZ, Washington Correspondent

DELIBERATIONS of the September meeting of the PIWC last week developed a number of highly important problems which will have to be dealt with in the near future and defined pitfalls which the industry will face through the remainder of the war and thereafter.

Oil Pact Discussion—Major subject of discussion was the pending Anglo-American oil agreement which, if accorded the status of a treaty, as now appears possible, will permit Congress to arrogate to itself powers which George A. Hill, president of the Houston Oil Company, asserted never were contenplated for it under the constitution.

Gasoline Ration Talk—The Council also indicated its objection to the continuance of gasoline rationing under any pretext after supplies of motor fuel become more plentiful, and raised the question of the propriety of the government selling oil and other surplus products at a profit.

Stocks Low If War Continues—Continuance of the European war through the coming winter will find stocks of oil in all districts at near-minimum working levels next March, it was predicted by the PIWC committee on petroleum economics, but the other side of the picture—the effect of a quick conclusion of the war—could not be given because of the lack of adequate information.

Oil Materials Report—In a report on materials, PAW Director of Materials Claude E. Parsons warned the industry against looking to the end of the war for quickly expanded supplies, pointing out that foreign drilling programs are expanding and rehabilitation of reconquered oil fields will be required.

Government Land Mineral Rights—Marking the defeat of Secretary Ickes' plans to secure for the government the oil underlying lands taken over for military purposes during the war, conferees on the surplus property disposal bill agreed to reject a Senate provision for the reservation of the oil and other minerals underlying surplus lands offered for sale.

Rationing to Save Cars and Tires—A report on the gasoline situation by the Office of War Information revealed that more oil is now being imported than before the war, that tanker transportation is increasing and that gasoline rationing will have to continue after V-Day to save automobiles and tires.

Saudi-Arabian Line Kept Alive—With no projects whatever before it, Petroleum Reserves Corporation, idle since its plan to build the Saudi-Arabian pipe line fell through, is seen in Washington as being kept alive until the Anglo-American oil agreement is disposed of. If the agreement is approved by the Senate, PRC will fold up, but otherwise it will be maintained in existence as a club over the head of the British.

World Oil Supply Plans—The United Nations world oil supply committee opened its sessions in Washington this week, prepared to determine world needs and sources of supply for the coming half-year. The last meeting was in London in the spring. The committee this time, recognizing the rapidly deteriorating position of Germany, will develop its estimates on two bases, one for application in the event of continuance of the war through the winter, the other on the assumption of an early defeat of Germany.

Oil Pact Attacked by Hill at PIWC Meet; Surplus Sales Profits Criticized

A number of currently important matters provoked extensive discussion by members of the PIWC at their September meeting last week, and while no definite actions were taken the way was paved for future expression by the council of its views on the Anglo-American oil agreement, gasoline rationing and government profit-making in the disposal of surplus war property.

The US-UK oil agreement was probably the most extensively discussed of the several matters which took up the time of the Council for an entire day, precipitated by an attack on its designation as a treaty by George A. Hill, president of the Houston Oil Company.

In an 80-minute dissection of the compact, Hill disclosed that while ten oil men were appointed as advisors to the American representatives at the technical meetings last April only three, John A. Brown, Alfred Jacobsen and W. S. S. Rodgers, were invited to participate in the discussions. The remaining seven were invited by telephone to come to Washington for a meeting with the technical group April 29, at which time he was given a copy of the proposed agreement, substantially in the form finally adopted, and asked for his reactions.

Hill made public at the Council meeting his comment on the proposed agreement, supplementing a previously-written letter in which he urged a "realistic" treatment of the specific issues with which the agreement was to deal.

Speaking in the presence of Charles B. Rayner, oil adviser to the State Department who headed the United States technical delegation, Hill attacked both the agreement itself and its adoption as a treaty rather than a convention, asserting that "the device of treaty-making in the case of the petroleum agreement is being used as a legal expedient for the creation of a federal power in the Congress or an International Oil Commission over and in excess of the powers delegated to Congress under the constitution."

"This can be lawfully and successfully achieved by merely predicating this new body of congressional powers on the treaty itself as the supreme law of the land," he said.

The congressional procedures referred to in the agreement, he charged, are completely modified as they now exist under the constitution by the simple ratification of the pact by the Senate, binding the government "to exercise powers which are beyond present congressional authority under the constitution, except for utilization of the petroleum agreement itself as the basis for new congressional authority."

"The subtle and igenious device of an international treaty, ratified by a two-thirds vote of the Senate, can erect a species of lawful federal control of the oil business, in various aspects and phases not now existent in the Congress," Hill told the council. "This unassailable legal device can be similarly employed in all kinds of international treaties receiving Senate approval and ratification and affecting any matters

that might become the subject matter of international negotiation."

The proposed treaty, Hill said, as a prerogative lawfully accruing to the Congress and the government of the United States from the legal consequences of its ratification, assumes federal power:

1. To fix what is considered to be a fair price for petroleum supplies to the nationals of all peaceable countries and on a non-discriminatory basis which embraces the assumed power of price fixing.

2. To determine from time to time what country is "peaceable" and what countries are "not peaceable" and what are the shifting criteria in making such determinations in conjunction with other parties signatory to the treaty, which is a far more delicate and dangerous adventure in diplomacy than our variable policy with respect to the recognition or non-recognition of the Latin American governments in the Western Hemisphere.

Assumed Government Function

3. To assume, as a function of government, the determination of what is, or is not, in all aspects of private trade and commerce in oil supplies among the nationals of all peaceable countries in relation to the matter of discrimination, over and beyond fairness and equity in the matter of pricing.

4. To undertake exercise of federal power to so control the development of "petroleum resources and benefits received therefrom by the producing countries" as to "encourage the sound economic advancement of those countries" even though, possibly, the current American concept of sound economy might be regarded in one or more of the producing countries involved as a deterrent instead of an advancement.

Hill denominated the agreement a "design for the progressive germination of cartels under government blessing," suggesting that a reconsideration of it may have provoked President Roosevelt's letter of September 8 calling on Secretary of State Hull for a curb on cartels, in which the president said a cartel is defined by economists as a system of controlling prices, production and of allocating markets by agreements. "The implications with respect to the cartelization of the oil industry cannot be escaped," he commented.

Under the treaty, he declared, legislation would undoubtedly be necessary at times to fix prices of oil or to compel production or sale of oil, whether produced in this country or in American-owned concessions abroad; legislation requiring companies with foreign concessions to pay greater royalties to foreign governments than required by terms of the concessions; the setting up of some sort of machinery to determine whether a nation is "peaceable" in order to be entitled to purchase oil.

The treaty, he continued, would require repeal of the general leasing act which denies benefits of the act to aliens of countries whose legislation denies similar privileges to nationals of this country. Thus, he explained, the United States would be under obligation to grant to any alien applicant the same lease and prospecting permit as would be granted to a citizen of the United States.

"It is evident," Hill summarized, "that much of the foregoing legislation could find no support in the powers delegated to Congress by the constitution. This does not mean, however, that the government is unable to carry out the obligations envisaged in the proposed oil compact, but merely indicates that the compact must be cast in the form of a treaty in order that the legislation may have a basis recognized by the courts as valid."

Hill recommended that the Council go on record as opposing the agreement in its present form in which, he said, it is not understandable.

The compact was defended by Rayner and by Deputy Administrator Davies, who declared it had nothing to do with price fixing or cartel arrangements.

It was explained that the agreement was not written with the idea of having it made a treaty, and that it was the President's idea of sending it to the Senate for approval. Furthermore, it was declared, there is a difference of opinion as to whether the pact is a treaty, and that is one of the questions which must be decided by the foreign relations committee.

Members of the Council engaged in extensive discussion of the matter, and the general consensus was that there is no objection to the arrangement if it is merely an agreement. The Council, however, refused to go on record regarding the subject in view of the short consideration it had been given, this being the first meeting since adoption of the agreement, and since the matter is not to come up before the foreign relations committee until after the elections, it was decided to refer it to the oil policy committee, with instructions to obtain the views and recommendations of each adviser and to file its report, with recommendations, at the next meeting of the Council, October 25.

Adopting appropriate resolution of regret over the death of John A. Brown, chairman of the oil policy committee, the Council appointed Alfred Jacobsen as his successor.

Attack Rationing Statement

Members of the Council also objected strenuously to the OPA release on the gasoline situation, indicating that rationing would be continued even if the defeat of Germany resulted in a surplus of motor fuel, as a means of conserving automobiles and tires.

They also objected to many contradictions in the report, but felt that the oil industry should not be saddled with the responsibility of withholding product from the market on any ground but an actual shortage of the product itself.

Although the Council took no action, the discussion reiterated the position it has maintained constantly since June, 1942, that gasoline rationing should stand on its own feet and that if it is necessary to save automobiles and tires some other means of doing so should be devised. It was pointed out that if military demand for 80 octane gasoline declines after V-Day because fewer trucks and automotive equipment will be used in the Pacific war, the industry will be unable to continue to produce war products unless it has an outlet for motor fuel. Such a situation, it was declared, would be particularly onerous to the independent refiners who operate on a small margin and need to dispose of their products as they make them in order to keep in business.

Following the discussion, Chairman Boyd was authorized to confer with PAW officials on the matter and issue an appropriate statement.

Profit on Surplus Sales

PIWC members also expressed alarm over a reported decision by Defense Supplies Corporation to sell surplus products at a profit wherever possible in order to cut down the multi-billion dollar loss which is expected to result from the disposition of war surpluses generally.

Specifically, they were concerned over a plan to sell some 250,000 barrels of lubricating oil, purchased by the Army from a major company at seven or eight cents a gallon. Packaged in small cans, at the "going" jobber price, or 18 to 20 cents, thus selling in competition with the manufacturer who, to protect himself, would have to buy the oil back from the government at a substantial loss.

It was pointed out that sales to the government were made on the basis of large quantities, involving no selling cost, practically on a cash basis, delivered in large lots, whereas in disposing of surplus purchased from the government, transportation and selling cost and profit must be added to the price at which the goods are bought. It was suggested that if the government agencies make it a practice to seek a profit on goods bought by the Army at advantageous prices, manufacturers generally might feel it dangerous to lay themselves open by filling government contracts at low prices and ask that the departments pay more nearly the prices at which they normally sell to distributors.

Although the Council was not asked to take any formal action, it was agreed that the matter was one of importance which should be further studied in view of the more than two billion dollars worth of petroleum products which may become surplus at the end of the war.

In recognition of the work he has been doing, the Council elevated Allan Hand from the position of secretary-treasurer to that of executive secretary and treasurer, materially broadening his duties and responsibilities.

War's Effect on Stocks

Continuance of the European war through the winter would see stocks of crude and practically all products at near-minimum levels by next March, the council was told in the report of the committee on petroleum economics.

If the war in Europe should end suddenly, it pointed out, there will be major shifts in demand which will result in an entirely different situation, but no information now is available on which to base any predictions as to the supply situation, other than that military gasoline requirements will substantially decline.

The report indicated that the demand for United States oil would reach 5,437,000 barrels daily in the final quarter of this year and 5,565,000 barrels in the first quarter of 1945, while supply will be 5,178,000 barrels daily for the fourth quarter this year and 5,194,000 barrels in the first quarter next year, both including imports; as a result, stocks would drop from an expected 473,100,000 barrels at the end of this quarter to 450,400,000 barrels at the end of the year

and 423,000,000 barrels by March 31, next.

The committee pointed out that the Pacific theater already is consuming much more than District 5 can supply and summed up the California situation as follows:

California Situation

"Crude production estimates are more optimistic than presented heretofore, varying from 865,000 during September to 892,000 barrels daily during the first quarter of 1945. These figures include 8000 barrels daily of new Elk Hills production in September and 28,000 barrels daily during the first quarter of 1945.

"Receipts of crude and products from other districts, all by tank car, vary from 122,000 in September to 131,000 barrels daily in the first quarter of 1945.

"Total available supply, representing the district supply of crude oil, natural gasoline, etc., and receipts from other districts, varies from 1,039,000 in September to 1,077,000 barrels daily in the first quarter of 1945. Since demand, including shipments to other districts, for crude and products varies from 1,046,000 in September to 1,187,000 barrels daily during the first quarter of 1945, 7000 barrels daily of demand must come from inventories during September and 110,000 barrels daily during the first quarter of 1945. With the possible exception of distillates, including cutter stock for special Navy fuel oil, it is believed that the district can handle these demands. Inventories decrease from 87,300,000 barrels September 1, 1944, to 69,600,000 barrels March 31, 1945, a reduction of 17,700,000 barrels during the seven-month period.

"As of March 31, 1945, the anticipated total inventory figure of 69,600,000 barrels is 10,100,000 barrels above the minimum working stock level. Of this excess, 4,000,000 barrels represents crude oil which should be run to stills as early as possible, and 4,100,000 barrels is shown as gasoline. This gasoline is mainly naphtha distillate and 91-octane aviation gasoline stock, the latter resulting from reduced future demand by the military in the face of sustained maximum production under present directives. Kerosine and distillate combined will be 2,500,000 barrels below minimum operating levels March 31, indicating the critical outlook for these products. The balance of the excess is distributed among other products, of which the largest item is 1,600,000 barrels of heavy fuel oil."

The committee commented upon the situation presented by the currently high stocks of heavy fuel oil, particularly in District 1, which have threatened interference with war product output in that district and District 2.

"Under the levels of demand considered in this report, that situation should be only temporary," it said, "but a sudden cessation of military activities in Europe and a curtailment of industrial activity, particularly a reduction in the high rate of steel manufacture, would aggravate the situation. This will require close and constant scrutiny, with increasing liberality in granting reconversions from coal to heavy fuel oil being desirable."

Materials Allotment

In his first report as PAW director of production, John R. McWilliams announced that the industry has been allotted 237,050 tons of carbon steel and 40,500 tons of alloy steel for the fourth quarter, as compared with requirements submitted by PAW of 245,000 tons of carbon and 50,000 tons of alloy steel. The amounts of 20,000 tons of carbon steel and 5000 tons of alloy steel requested for production MRO, however, were granted in full.

McWilliams reported that 14 Elk Hills wells have been completed with production from these averaging 3400 barrels daily. The first few wells completed just west of the previously developed Tupman area produced 19-gravity as compared with the average 22.3-gravity in the Tupman area, he said, and it has been necessary to revise the originally programmed drilling schedule to provide an extensive semi-exploratory plan to determine which undeveloped areas will yield oil comparable with the Tupman production.

McWilliams said opinions differ as to what the effects on the crude situation may be after the close of the European war, stating that it looks like we might get back to maximum efficient rates of production, which may mean a cut-back of not more than 100,000 to 150,000 barrels per day.

Parsons Report

Rotary drilling rigs in operation have increased since January from 1294 to 1729, it was disclosed by Claude P. Parsons, PAW director of materials. The all-time prewar peak was 1271 in 1941.

Parsons warned against figuring now on the end of the war, pointing out that while there is considerable discussion going on concerning reconversion plans of the War Production Board, "the matter is in its theoretical stage and needs considerable discussion and clarification." Meanwhile, he commented, the materials division must proceed on the realistic basis that the war is not yet over.

"Practically all foreign petroleum drilling programs are expanding, and the rehabilitation of reconquered oil fields will come into the picture," he said. "The unprecedented domestic drilling program plus the increased foreign demand may further amplify critical shortages of petroleum equipment. Many petroleum equipment manufacturers are still engaged in war contracts and may find it difficult to meet the demands.

"There should be no premature easing up in our fight for materials to enable us to continue supplying the petroleum life-blood to our Air Force and our mechanized ground units. Let's hope the first assault on Germany proper will be the last and then, even with Japan still to be whipped, there should be military cut-backs which would change the materials picture materially. Then, we hope, we can go home."

Parsons said deliveries of internal combustion engines continue to improve, although they are more subject to variation than many other items because of military demand. Lumber continues to be seriously short, and while PAW has succeeded in obtaining an allotment which it believes will take care of the most essential petroleum needs, every possible means of conservation must be exercised.

Parsons announced that 154 heavy, 227 medium and 171 light trucks were needed to maintain operations, and the Office of Defense Transportation has promised to take care of the heavy and medium truck needs out of the civilian pool. However, he said, the ODT pool of light trucks is exhaused, and the WPB has none scheduled for manufacture before the second quarter of 1945; the Army is releasing a considerable number of used light trucks which operators may be able to obtain. The tire situation is extremely critical, with only 158,000 heavy truck tires available to meet the current demand of industries with One and Two priorities, but the WPB has diverted some tires from new trucks, from certain foreign programs and from other sources to take care of the top priorities which includes the oil industry.

Drill Pipe, Tool Joints

Due to the extremely high number of rotary rigs in operation and the further increases expected, Parsons warned that many difficulties may be encountered during the fourth quarter because production of drill pipe and tool joints cannot be increased proportionately.

It is estimated that third quarter production of drill pipe will be 2,563,300 feet and fourth quarter 2,743,613 feet, which will make a total for 1944 of 9,751,744 feet. In July, 28,701 tool joints were produced and the backlog of orders was 332,498, and 813 pumping units were manufactured, with a backlog of 6601.

"We will continue to work with manufacturers of pumping units to help them obtain delivery of the various tight components (engines, bearings, gears, etc.) which they require," he said. "There are other tight items of equipment, including boilers, wire rope, manila cable, bearings, malleable castings, synthetic rubber, etc., which we will continue to expedite for urgent cases."

Prohibition against the continued use of butane in development well drilling is contemplated by PAW, it was reported by James E. Pew, director of natural gas and natural gasoline, who warned of a serious butane shortage by October 1.

Public Land Problems

Development of public lands was discussed, and it was recommended that a flat royalty rate of 12½ percent be adopted and acreage limitations abandoned, the latter because the search for oil is too intense and there are too many people engaged in the business at a time when new discoveries are becoming increasingly difficult and costs are increasing. It was also recommended that the authority of the Secretary of the Interior under the law providing for unit operations should be limited and lease forms should be simplified and standardardized, with the "Producers 88" lease as a pattern.

With respect to the disposition of the millions of acres of land acquired by the government during the war, a resolution recommended that all such lands be offered for sale without mineral reservation, and that the mineral interests be sold on lands for which a purpose now exists for surface use only, where not inconsistent with future development.

Other resolutions called upon the administrator to take steps with the WPB to facilitate re-establishment of adequate stocks of oil field tubular goods in mill depots, and to seek the lifting of the restriction on the publication of import and export figures in order that full information may be had.

Mineral Rights Reservation Stricken From Surplus War Property Sale Bill

Proposals that the government reserve oil and mineral rights on lands to be disposed of as surplus war property, written into the surplus property disposal bill by the Senate, have been eliminated by a conference committee which is ironing out the differences between House and Senate, on the ground that it was an approach to the nationalization of mineral rights.

The reservation of mineral rights was written into the Senate bill by Senator Joseph C. O'Mahoney of Wyoming and strongly supported by Secretary of the Interior Ickes.

Oil-state congressmen strongly opposed the provision, on the ground that, as worded by Senator E. H. Moore of Oklahoma, it was a "sidewise approach" to nationalization.

In a letter to Senator Elbert D. Thomas of Utah, chairman of the conference committee, Moore pointed out that, with the exception of certain Indian lands, the patentee of lands has always been granted all mineral rights without limitation.

"It is not the declared policy of the United States to sever mineral rights from surface rights," Moore wrote. "No Congressional mandate exists on the subject, except as to lands acquired by foreclosure under one or another of the federal farm loan acts, and this exception is a mistake made several years ago which is causing confusion and delay in oil and gas exploration and should be corrected at an early date."

Moore charged that "certain agencies of the present administration have long sought to obtain control over the production of oil and gas.

"They have caused numerous bills to be introduced in the Congress to achieve this objective," he declared. "The Congress has wisely turned back all such assaults upon the petroleum industry. Now, it is attempted by indirection to do that which has been refused.

"Reports made by committees of the 78th Congress have pointed to the growth of Federal land ownership. It is time to stop and take stock. The trend is to colectivism, to public ownership of all lands and natural resources. Private enterprise languishes and finally dies with the continuation of that trend.

"The instant proposal to reserve mineral rights under certain conditions is contrary to sound public policy and should be stricken from the bill; there should be substituted an affirmative declaration that any conveyance of surplus land shall be without reservation of any kind."

OPA to Discuss Payment Of Hardship Subsidies

Price Administration officials will meet this week with representatives of trade associations and major and independent operators to discuss a formula for the payment of subsidies in hardship cases.

The basic ideas for a formula easy to put into effect and to administer have been worked out in OPA. They cover hardship and high-cost producers who are not included in the list of operators eligible for premium payments because of less than nine barrels per well per day production.

A survey was said to have indicated there will not be an impressive number of such cases.

Orders now in course of preparation by OPA will revoke the premium payment of 35 cents per barrel originally provided for the Bateman Ranch pool in King County, Texas, it having been determined that this was not a stripper pool but a flush pool in which full production had been held back awaiting the completion of pipe line transportation.

The following pools have been added to the eligible list:

Kansas: All pools in Crawford County, 35 cents; Kruse pool, Rooks County, 25 cents; Hollow-Nikkel, Harvey, 20 cents; Brown, Cowley, 25 cents.

Michigan: Geneva, Van Buren, 35 cents.

Oklahoma: Platter, Osage, 35 cents.

House Small Business Group Meets in Austin

Southwestern oil men have been invited to participate in hearings to be held in Austin, Texas, September 20 and 21 by the House small business committee headed by Representative Wright Patman of Texas.

The subject of the hearings will be the problems confronting independent oil producers in the reconversion period, and a number of representatives of Independent Petroleum Association and unaffiliated operators are expected to be heard.

The Patman committee has been working for the benefit of the independent producers and, following hearings in April, 1943, recommended an increase of 35 cents per barrel in crude prices.

Members of the committee, all of whom are expected to attend the Austin hearing, are Representatives J. W. Robinson of Utah, Eugene J. Keogh of New York, Henry M. Jackson of Washington, Estes Kefauver of Tennessee, Leonard W. Hall of New York, Walter C. Ploeser of Missouri, William H. Stevenson of Wisconsin and Evan Howell of Illinois. J. K. Brim of Sulphur Springs, Texas, is counsel.

Railroad Commissioner Ernest O. Thompson pointed out that at the end of the war, producers will have their allowables cut seriously, which will result in a material decline in gross income However, it will not be possible to reduce operating expenses proportionately, and therefore, it will be essential that the small company be compensated by a higher price for the crude it sells.

Thompson was advised that IPAA members would appear, prepared to give completed evidence on all types of operating costs.

Current Oil Imports Are Higher Than 1941 Figure

Imports of crude oil into the United States from adjacent foreign countries are running higher than the 1941 average, and tankers now are moving 440,000 barrels, or 25 percent of the 1,770,000 barrels of crude and products delivered to the East Coast daily, it was disclosed by the Office of War Information September 13.

Although East Coast receipts are running 230,000 barrels daily more than before the war and U. S. production is at record-breaking levels, the OWI warned that there can be no basic changes in civilian gasoline rationing before the end of the war in Europe and, if supplies then increase, rations will be enlarged first for trucks and busses, to restore services which have been seriously curtailed, and then for holders of "B" rations.

At the same time, it was pointed out that PAW now, despite increases in allocations, is encountering difficulty in meeting in full the claims of the Office of Defense Transportation.

Transport of oil today requires more than 115,000 tank cars of all types, including those used for liquefied petroleum gases, but the need for additional equipment so increased with the invasion of Europe that an expanded program has been authorized under which the Army will construct 400 new high pressure type cars and 600 other cars will be converted, all to be of 10,000 gallon capacity, it was reported.

Petroleum supplies make up 50 percent of all the tonnage shipped to our invasion forces overseas. Gasoline and other petroleum products for the armed forces add up to about 1,600,000 barrels per day. Military gasoline constitutes the largest item in this huge use of oil supplies. In 1942 the military drain amounted to 13.7 percent of all gasoline; in 1943, it increased to 27.6 percent and this year will run between 37 and 40 percent of the greatly expanded over-all supply.

Production has reached a point where some fields are being operated at levels in excess of the efficient rate, but despite the larger domestic output and the increased importations, demand has been greater than current supply and crude oil stocks in the United States have been reduced by about 20,000,000 barrels so far this year—6,000,000 barrels of it in the past 60 days, OWI said.

Gasoline production is running above 2,00,000 barrels daily, but 800,000 barrels of this consists of aviation, military and other special grades. In contrast, production in September, 1941, was 1,966,000 barrels daily, nearly all of which was available for civilian use.

Gasoline stocks are at levels about those of 1941, but only about one half of the present inventories are grades available for civilian use, the other half consisting of unfinished gasolines, aviation and special military grades, butadiene, toluene and solvent and other naphthas; in 1941, about 90 percent of the total gasoline stocks was available for civilian use.

An allocation of 1,173,000 barrels of automotive gasoline daily was designated last week for the final quarter of 1944. This is a decrease of 77,000 barrels daily over the allocation for the current quarter, and represents the seasonal decline in farm needs and in sawmills, construction and other nonhighway uses.

Hearing on Humble Injunction Against Federal Agencies Reset for Wednesday

The Federal District Court at Dallas has postponed until September 20 the hearing on Humble Oil & Refining Company's suit for temporary injunction to prevent government agencies seizing its Ingleside refinery. The postponement was made at the request of the United States attorney general. At the same time, the court directed the defendants to show why the temporary restraining order granted September 7 by Federal District Judge W. H. Atwell should not remain in effect until the case is tried on its merits.

The dispute arose out of an attempt by the National War Labor Board to insert a maintenance of membership clause in Humble's contract with the CIO union, although the Dallas regional office of WLB had approved without the maintenance of membership clause a contract which does not expire until May, 1945.

The Humble company refused to comply with the WLB request on the grounds: (1) such a stipulation would violate the Wagner Labor Relations Act, because it would discriminate against employes who might wish to withdraw from the union, and because only 340 out of its 14,000 employes were CIO members; (2) That there was no labor trouble at the plant and output of war goods was not being interfered with, and inclusion of the membership maintenance clause might hinder rather than accelerate war production under such conditions.

However, the National WLB board on April 1 issued an order requiring inclusion of the membership maintenance clause. The company still did not comply, and now is attacking the order and a subsequent threat to take over its Ingleside plant as unlawful on three allegations:

1. That the WLB order is void, because it is not based on evidence in the case which shows there has been no interference with the production of war goods, but is based solely on the announced policy of granting maintenance of membership in every case requested by the unions, whereas the law requires this only where it will prevent reduction of war goods output;

2. That WLB has no enforcement powers under the law, yet has applied sanctions illegally against the company through refusing applications for wage increases for employes, giving noncompliance with the order as the reason;

3. That WLB and other government agencies entered into a conspiracy to take over the Ingleside refinery as a means of compelling compliance with the board's order.

Included in the list of conspiring government agencies is PAW. The company's court petition for a restraining order said Ralph K. Davies of PAW telephoned Harry Wiess, Humble president, September 6 and "stated to him in substance that unless plaintiff immediately accepted said maintenance of membership provision in its contract . . . he and his associated would immediately take over plantiff's plant." The company contends that under the law when two or more parties act together to do an unlawful act or to do a lawful act in an unlawful way, they are conspirators.

Davies has denied that PAW was a conspirator to try and force union demands on Humble, that he has no interest in the merits of the case, and that PAW's interest was due entirely to the probability it would be assigned the job of running the plant in the event of seizure. But the company contends that if PAW was willing to accept control of the plant when WLB was unlawfully trying to force union demands on it, the agency becomes a party to the conspiracy.

Interstate Oil Compact Meeting Set October 5

The Interstate Oil Compact Commission will hold its three-day fall quarterly meeting in the Biltmore Hotel, Oklahoma City, starting October 5.

The British-American oil agreement, states' responsibilities in postwar regulation of the oil industry, and the important, newly discovered West Edmond oil field will be discussed, E. G. Dahlgren, acting secretary of the commission, announced.

The first day will be devoted wholly to meetings of committees and study groups. Governor Andrew F. Schoeppel of Kansas, commission chairman, will preside at the general open sessions beginning Friday morning, October 6, and continuing through Saturday.

Universal Oil Products Company Is Given to American Chemical Society

Gift of Universal Oil Products Company to the American Chemical Society was announced at the annual meeting September 13. The donors are Phillips Petroleum Company, Shell Oil Company, Standard Oil Company (Indiana), Standard Oil Company of California, Standard Oil Company (New Jersey) and The Texas Company. In accepting Thomas Midgley, Jr. ACS president, said that the only condition in the donation is that income derived from operation of UOP "be used by the Society in its discretion for research in the fields of science relating to the oil industry."

Universal Oil Products Company will continue to operate as at present.

Universal, one of the great American research organizations, owns the famous Dubbs' cracking process for obtaining high-grade gasoline as well as the "UOP" catalytic process for making high-type anti-knock gasoline from refinery gases. Among its wartime achievements was production of triptane, a hydrocarbon of extremely high octane rating which is used in manufacturing aviation gasoline. Important work on chemical developments from crude oil, refinery gases and natural gas also has been undertaken. Although essentially a research company, Universal also has done some engineering work in setting up small refineries. Dr. Gustav Egloff is the company's director of research.

For some time the Department of Justice has been investigating company operations and only last week there was presented before a Senate sub-committee statements showing that Universal had dealt with the Japanese befor Pearl Harbor and had shared valuable patents (THE OIL WEEKLY, September 11). It was shown that Universal had referred doubtful contracts to Washington for approval, and had complied with the "moral embargo" with the result that it was sued for $10,000,000 by the Japanese.

Bright Future Predicted For Horizontal Drilling

Increased production and reduced cost are claimed for horizontal drilling in the first report on the "Ranneywell" installation near Franklin, Pennsylvania by Leo Ranney, technical advisor on the project and inventor of the drilling method.

Ranney declared that with only 10 acres of the 400-acre tract subjected to gravity drainage by the "Ranneywells" for a period of 180 days ending September 2, with only one of the producing wells shot, and with 15 points of vacuum applied to the installation for only 20 days, production during the six months averaged 28 gallons of oil per acre tapped per day. This is 56 times as much oil per acre per day as was produced by the vertical wells on the lease, under 25 points of vacuum, pumping 24 hours a day in 1940 and 1941.

In a later report, Ranney said "production is steadily increasing from two shot wells 2235 and 2355 feet long, the production from each well now being more than from 100 vertical wells in the field. This is accounted for by the fact that drill water and wash water are being pulled out of the formation around each well by a vacuum."

It is Ranney's claim that if horizontal wells had been drilled initially, the field's 80 years of production could have been obtained in less than two years. He also says the horizontal wells have produced as much oil per acre in six months as would have been recovered by vertical wells, at the 1940 rate, in 28 years.

As for the cost, he cites that the actual expense of producing oil from the old vertical wells exceeded $3 a barrel, while horizontal wells will produce at a cost of 15 cents a barrel.

Darrough Succeeds Owen

After 24 years service Lloyd G. Owen, vice president and general counsel for The Carter Oil Company, has retired and was succeeded by Forrest M. Darrough who has been named general counsel and director of the company.

Darrough joined Carter in 1930 and became general assistant counsel in 1938.

Jester Skeptical of Oil Pact, Hits PAW Control

Railroad Chairman Beauford Jester of Texas prepared to leave Washington late last week after expressing concern over the Anglo-American oil pact and telling Texas members of Congress that PAW should immediately relax its restrictions.

Jester expressed concern over the oil treaty now before the Senate for ratification but made no definite statement pending study of data gathered in conferences with Tom Connally of Texas, chairman of the Senate Foreign Relations Committee, and administration and oil industry leaders.

Declaring himself "skeptical" of the wisdom of this nation entering into the oil pact, Jester said one other member of the three-man Texas commission, Olin Culberson, is inclined to view the treaty in the same light, while the remaining commissioner, Ernest O. Thompson, has spoken favorably of it.

Connally assured Jester that hearings on the treaty, which will not be held until after the November election, will give both sides an opportunity to be heard. Although Connally has not expressed his own views publicly, he is understood to look with disfavor on the pact.

Jester said he feared the pact would be an entering wedge for establishment of federal control over domestic production.

Earlier, Jester had written Harold Ickes, PAW chief, that he was "heartened" by an assurance in a recent letter from Ickes that "PAW is a war agency and that its regulations and restrictions will be relaxed and revoked as rapidly as war conditions permit."

The Texas commission will comply with Ickes' suggestion to submit to the National Conference of Petroleum Regulatory Authorities request for the immediate relinquishment and revocation of certain PAW rules and regulations," Jester wrote.

Denying Ickes' claim that the only PAW regulation affecting matters under state jurisdiction are those which govern use of materials for the drilling of oil and gas wells on tracts of prescribed areas, he wrote: "We can point out to you a most considerable amount of PAW regulation and control over and beyond that which you mention."

PAW's control over refining and transportation, the 15-day hitch to distillate production and the PAW certification of demand were cited subsequently by the commissioner.

Jester is fearful that it may be necessary to take the matter to Congress before full control of the industry is regained. The Texas Commission is studying the postwar situation because, as Jester said, "we want to be ready to start work immediately on conservation and adding to our depleted reserves by exercising our regulatory rights to that end.

Senate Extends Leases

Without debate, the Senate last week approved legislation extending until December 31, 1945, the life of public land leases scheduled to expire before that date.

Since there was no disagreement between Senate and House, the measure now goes to the White House for approval by President Roosevelt.

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED Sept. 16	Sept. 9
Alabama	300	200
Arkansas	81,150	80,500
California	875,000	862,100
Colorado	8,650	8,200
Florida	50	50
Illinois	204,800	208,400
Indiana	14,800	13,000
Kansas	279,600	254,300
Kentucky	24,500	24,400
Louisiana	362,500	362,900
North Louisiana	73,700	73,500
South Louisiana	288,800	289,400
Michigan	50,200	50,800
Mississippi	43,550	46,800
Missouri	100	100
Montana	23,700	24,800
Nebraska	600	600
New Mexico	106,300	108,500
New York	13,400	13,800
Ohio	8,200	8,500
Oklahoma	341,200	339,550
Pennsylvania	39,700	41,200
Tennessee	30	35
Texas	2,156,300	2,156,050
Upper Gulf Coast	543,000	543,050
East Texas Field	371,000	370,950
Rest of Eastern Texas	149,800	149,800
Lower Gulf Coast	243,300	243,350
Southwest Texas	79,100	79,050
South Central Texas	19,400	19,350
West Texas	504,100	504,050
North Texas	147,800	147,750
Panhandle	98,800	98,700
West Virginia	8,600	8,800
Wyoming	89,100	87,500
Total United States	*4,732,330	4,701,085

* New all-time peak.

John A. Brown, President Of Socony-Vacuum Dies

John A. Brown, president of Socony-Vacuum Oil Company, Inc. and a prominent figure in the oil industry died September 9. Brown was a member of the board of directors and executive committee of the American Petroleum Institute, chairman of the general committee of PAW District 1, a member of the PIWC from its inception, chairman of the PIWC national pool policy committee and a member of numerous other committees. In April, last he was designated as one of the ten oil men named as industry advisers to the advisers to the United States group engaged in the development of the Anglo-American oil treaty.

John A. Brown

A native of Pennsylvania, Brown was with Standard Oil Company of New Jersey from 1918-28, vice president and later of General Petroleum Corporation of California until 1933 when he became president of Socony-Vacuum.

The passing of Mr. Brown was declared by PIWC Chairman William R. Boyd, Jr., to be "a critical war casualty in a most crucial period of the oil industry's war program" at a time when his place cannot be filled. It is entirely true to say that he is another of our war casualties."

October Allocations to Drop Back to August Level

Production allocations for October are expected to be cut back to about the level of August in a move on the part of PAW to return to more conservative operation a number of fields which have been producing at more than maximum efficient capacity. The heaviest cut will be made in Texas, but several other states also may take substantial reductions.

PAW officials believe that the supply situation now is such that steps can be taken to cut down the loss in potential production caused by over-capacity operation.

Texas Asked for Less Production in October

The Petroleum Administrator for War has asked that Texas produce 2,278,000 barrels of oils of all types during October. Of this amount, 2,133,000 barrels is crude oil, which is 30,000 barrels less than the total for September.

The administrator specified that the 30,000 barrels reduction be made in fields producing sweet crude, but not tributary to the Longview terminal of the Big-Inch pipe line. This, in effect, asks that there be no cut in the production from the East Texas field.

The request, received by the Railroad Commission Friday, calls for the production of 484,000 barrels of sour crude daily, the same amount as requested for September.

Army to Offer Surplus Trucks for Sale at Once

Nineteen thousand trucks, 2000 passenger cars and 9000 motorcycles are being turned over to the procurement divison of the Treasury by the United States Army, for disposal as surplus property. The vehicles will be placed on sale through regular trade channels immediately.

Essential users who need used Army vehicles should apply to PAW, ODT or WPB regional offices which are authorized to issue letters of certification to essential users. All sales must be negotiated through dealers, and none will be made direct to the consumer. The holders of certificates may accompany their dealer to Army camps to inspect the vehicles they wish to buy.

Cycling Plant Contract

Humble Oil & Refining Company has awarded a contract to Hudson Engineering Company for construction of three additional fractionating towers costing $800,000 at the Katy cycling plant. The towers will produce pure propane, iso-butane and normal butane.

The second unit of the Katy plant is nearing completion, bringing the capacity to 350,000,000 feet daily.

Amerada High Bidder

Amerada Petroleum Company was high bidder at an oil and gas sale of lands of the Five Civilized Tribes held September 12 at Muskogee, paying $2000 for a half interest in 80 acres in Okfuskee County comprising the S½ NW of 15-10n-10e, near West Weleetka. Eighteen of the 37 tracts offered were sold for cash bonuses totaling $13,214.65.

August Completions Lag Behind Record Rate Maintained During Previous Month

Following the steady increase in drilling activity in April, May, June, and July, there was some let-down in the rate of completions in August, although the month was the most active this year except July. United States completions averaged 489 per week in the 5 weeks of August, or from July 29 to September 2. In the preceding 4 weeks of July, completions had set a record for this year in averaging 520 per week. The current rate of completing wells is about 25 percent above that in the early months of this year, when around 400 completions a week were recorded. August, 1944, completions also were about 25 percent above those of August last year, when 395 wells per week were completed.

For September, completions should run about the same as in August, or higher, as there were more rigs in operation August 31 than on July 31, the number having increased to 4011 from 3917. These totals represent wells drilling and rigging up.

In the first 8 months of this year, weekly average well completions in the United States were 25.9 percent higher than those in the like period last year. This year the average has been 437 per week, against 347 weekly in the first 8 months of last year.

Virtually all states and districts have had more drilling this year than last year, the exceptions being Arkansas, Iowa, North Louisiana, and Nebraska.

While drilling is up approximately 26 percent for this year in the United States, Texas has had nearly 60 percent more completions, accounting for practically one fourth of the national total. Within Texas, increases have been around or above 75 percent for West Texas, the upper Gulf Coast, and South Central Texas, and over 50 percent on the lower Gulf Coast. California's increase has been 43 percent, Kentucky's over 100 percent, and Mississippi's nearly 100 percent. New Mexico shows a 66 percent increase. In most other districts, increases have been around or below the national average.

The increase during August in the number of wells drilling was accounted for in large degree by California and Texas. The former had 401 wells drilling or rigging on August 31, compared with 368 July 31, and Texas had 1123 against 1083, with the West Texas district mainly responsible. Pennsylvania also showed a material increase in active rigs.

The 4011 wells drilling and rigging on August 31 this year compared with 2868 a year previously, an increase of nearly 40 percent.

Rejuvenation Attempt With Natural Gas Planned

Rejuvenation of the 22-year-old Blossom Sand Pool will be attempted by reinjecting natural gas, according to the Arkansas Oil and Gas Commission.

Located in the Stephens Field, Columbia, Nevada and Ouachita counties, the 202-well pool is producing less than three barrels per well per day. Permit for the secondary recovery operations went to Ohio Oil Company, which operates 125 wells in the pool.

Ohio Gas Well Brought in By Northern Ordnance

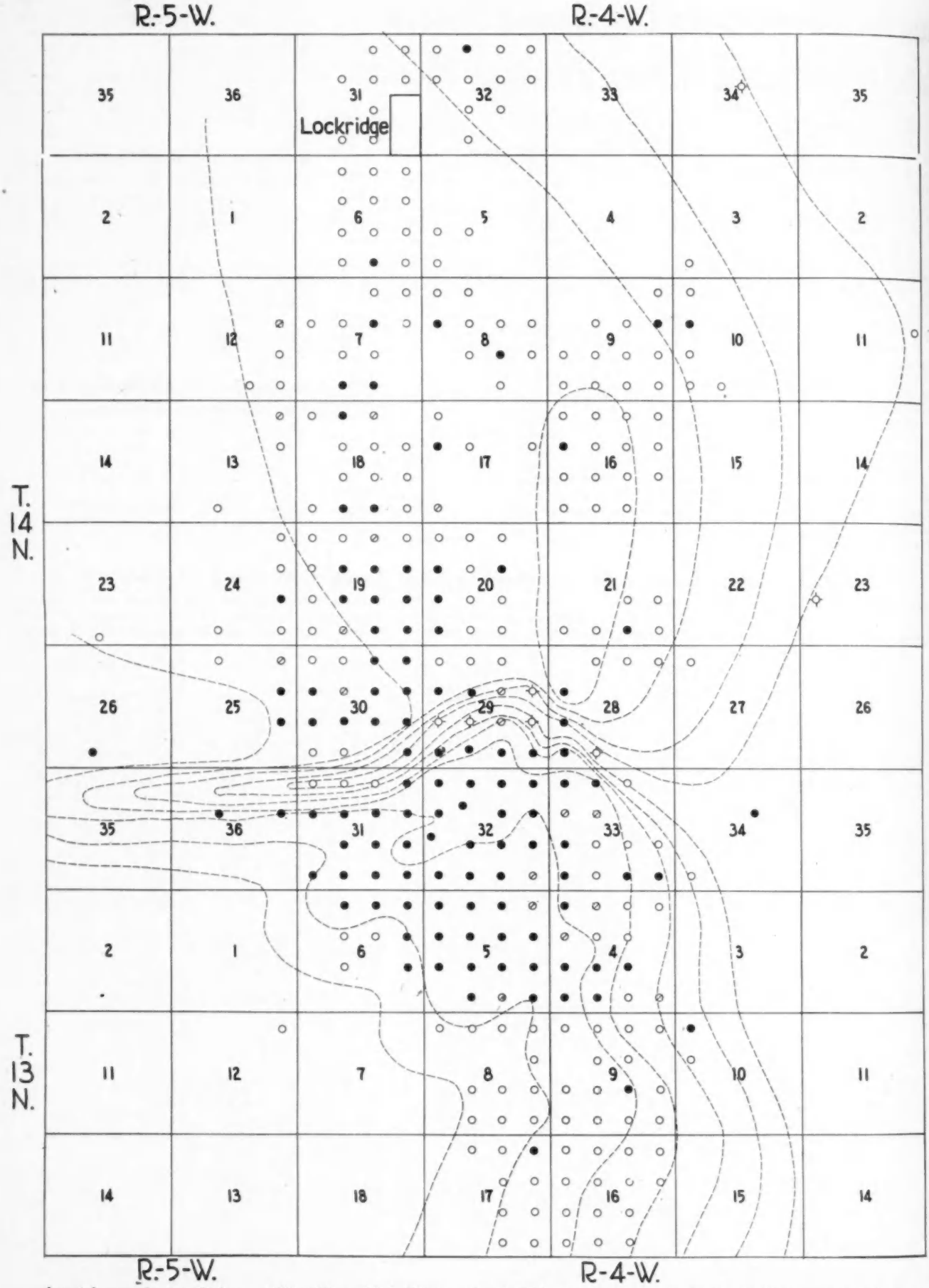
Northern Ordnance, Incorporated's No. 1 Mary Martin, wildcat on a 1200-acre block, Sec. 3, Green township, Wayne County, Ohio, has been completed as a gas well in the upper part of the Clinton sand at 3440 feet. The well gauged more than 800,000 feet, shut-in pressure 1125 pounds.

U. S. Completions in First 8 Months 25.9 Percent Above Last Year

(Fiugres compiled from weekly reports of editorial staff men, with following exceptions; Arkansas data from Araknsas Oil and Gas Commission; Illinois from Illinois Geological Survey except for August; Indiana from Indiana Division of Geology; Missouri from Missouri Geological Survey; Allegany, New York, Bradford and Kane-Clarendon, Pennsylvania, from the Producer's Monthly; Tennessee from Tennessee Division of Geology.)

State or District	MONTHLY COMPLETIONS: AUGUST 1944 — Details for August, 1944 — New Wells *Oil	Gas	Dry	Others[6]	Old Wells Deepened	Total Completions Aug. 1944[1]	July 1944[2]	Aug., 1943[2]	Total Footage August, 1944	CUMULATIVE COMPLETIONS: First 8 Months — Details, Jan.-Aug., 1944 — New Wells *Oil	Gas	Dry	Others[6]	Old Wells Deepened	Total Completions Jan.-Aug., 1944[4]	Jan.-Aug., 1943[5]	Percent Change in Weekly Average	Total Footage 8 Months 1944	RIGS IN OPERATION — Details for August 31, 1944 Drilling	Rigs Up	Shut Down	Total: Drilling and R. U. Aug. 31, 1944	July 31, 1944	Aug. 31, 1943
Alabama			4			4	3	1	23,295	7		14			21	2	+ 922	99,682	7	1	1	8	6	
Arizona							3					6			6			16,190			2			
Arkansas	9	1	13			23	37	26	101,045	91	4	54			158	174	— 11.7	915,993	35	3	3	38	46	42
California	163	3	29		11	206	157	140	726,005	1,068	19	214		59	1,360	925	+ 42.9	4,815,881	353	48	29	401	368	300
Colorado	3	1				4	2	9	12,980	12	1	5			18	21	— 16.6	85,928	13		15	13	18	5
Florida								1				1			1	1		5,300	2	2	3	4	4	3
Georgia			3			3	1		19,120			5			5	2	+ 133.3	26,542	1			1	2	
Illinois	147	90	2		16	255	217	147	650,423	754	4	479	6	32	1,305	1,167	+ 8.7	3,334,132	186	28	14	214	244	183
Indiana	11	2	19			32	34	32	61,412	86	10	87		3	200	171	+ 13.5	374,643	35	10	7	45	41	47
Iowa												2			2	3	— 3.3	3,470	1			1	1	
Kansas	90	5	59	2		156	165	185	534,349	595	32	535	17	7	1,186	1,111	+ 3.7	3,991,638	268	21	8	289	273	246
Kentucky	45	7	29	2	1	84	68	55	152,210	223	80	188	3	5	499	232	+ 109.1	933,079	82	13	10	95	91	68
Louisiana	40	7	30	2		79	69	59	571,100	287	25	186	5	4	507	416	+ 18.5	3,819,910	160	11	10	171	150	114
North	4	6	16	1		27	28	22	99,361	67	22	83	2	1	175	179	— 4.9	754,493	58	2	7	60	49	34
South	36	1	14	1		52	41	37	471,739	220	3	103	3	3	332	237	+ 36.2	3,065,417	102	9	3	111	101	80
Michigan	22	9	32			63	65	74	142,054	165	35	231		5	436	371	+ 14.2	1,066,373	96	20	34	116	105	117
Mississippi	9	1	5			15	35	9	91,110	55	2	59	1		120	61	+ 91.4	685,895	38	6	2	44	39	11
Missouri	3		5			8	5	2	11,014	8	4	14			26	17	+ 46.9	24,537	9		4	9	7	2
Montana	29	5	21			55	28	27	143,971	144	16	67	9		236	156	+ 4.7	599,062	47	10	33	57	52	45
Nebraska								2		3		4			7	31	— 77.9	17,740	1			1	2	2
New Mexico	21	3	14		1	39	25	20	122,837	172	14	83		5	274	160	+ 66.2	813,579	86	3	19	89	94	79
New York	64		36			100	113	122	134,396	523	2	47	262		834	788	+ 29.3	1,154,229	95	12	23	107	116	120
N. Dakota																					1		3	1
Ohio	23	55	56			134	78	83	360,619	110	284	222	13	1	630	590	+ 3.8	1,646,157	175	25	43	200	195	186
Oklahoma	27	2	99	9		137	163	165	714,955	571	89	445	33	16	1,154	892	+ 25.8	4,262,677	422	67	27	489	509	297
Pennsylvania	146	25	10	127		308	266	253	540,190	926	168	50	840	1	1,985	1,662	+ 16.1	3,465,485	304	50	63	354	307	270
South Dakota																					2		2	1
Tennessee							2	1		2	1	6			9	6	+ 47.1	7,848					4	5
Texas	361	15	240	4	13	633	469	466	2,810,346	2,345	117	1,465	16	105	4,048	2,695	+ 48.8	18,170,338	1,062	61	119	1,123	1,083	626
E.Tex.Bord.	3		5			8	2	1	47,524	8	3	10			21	16	+ 26.1	128,703					7	8
E.Tex. Field														3	3	5	— 42.8	460						
R. E. Texas	10		6			16	27	25	74,049	89	3	97		1	190	149	+ 24.2	1,136,795	62	1	7	63	57	42
North	75		67		6	148	110	131	452,621	463	5	437	12	26	943	661	+ 33.4	2,758,602	131	6	32	137	160	107
W. Central	25		24			49	26	52	114,739	111	6	142		15	274	249	+ 7.1	639,334	61	1	36	62	62	55
West	135	3	33		2	173	113	91	788,258	835	8	187		41	1,071	585	+ 78.0	4,830,940	437	13	28	450	419	216
Panhandle							30	21		110	14	19		1	144	136	+ 3.1	451,404	92	16	4	108	85	29
Upper Coast	33	3	24	2	1	63	42	39	446,503	202	16	149	2	10	379	211	+ 74.6	2,755,667	105	8	3	113	96	74
Lower Coast	55	7	45	1	2	110	82	67	702,752	383	46	213	1	3	646	403	+ 55.9	4,059,068	119	13	1	132	137	55
Southwest	22	2	24	1		49	30	36	183,900	123	15	162	1	2	303	242	+ 21.8	1,223,362	39	1	3	40	45	32
S. Central	3		12		2	17	7	3	32,955	21	1	49		3	74	38	+ 89.0	218,958	16	2		18	15	8
Utah			1			1			4,743			1			1			4,743			5		3	1
West Virginia	6	68	8			82	66	76	205,462	54	473	76		1	604	417	+ 40.9	1,535,033	71	11	17	82	96	55
Wyoming	19		6			25	11	20	100,909	98	1	14	1	1	115	85	+ 31.3	514,790	59	1	31	60	56	42
Total U.S.	1,239	299	721	146	42	2,446	2,082	1,975	8,267,500	8,299	1,381	4,560	1,206	245	15,747	12,156	+ 25.9	52,423,829	3,608	403	520	4,011	3,917	2,868

* Includes distillate wells. [1] Wells completed in 5 weeks, or 35 days, ended Sept. 2, 1944. [2] Wells completed in 4 weeks, or 28 days, ended Aug. 28,1943. [3] Wells completed in 4 weeks, or 28 days, ended July 29, 1944. [4] Wells completed in 36 weeks, or 252 days, ended Sept. 2, 1944. [5] Wells completed in 35 weeks, or 245 days, ended Aug. 28, 1943. [6] Water input, gas injection, and salt water disposal wells.



Isopatch map showing thickness of West Edmond Bois D'Arc section in 25-foot contour intervals. Erosional gully or stream is shown in center of field. Thickest portion of Bois D'Arc is in south central and southwestern parts of field. (See article starting on opposite page.)

—Map prepared by Kenneth A. Ellison, consulting geologist, Oklahoma City

West Edmond Opens Big Area for Hunton

Most of wells completed in Bois D'Arc section of upper Hunton lime formation, of Devonian age

By E. G. DAHLGREN

THE West Edmond field of central Oklahoma is definitely one of the best fields discovered since Pearl Harbor, and is of additional significance because it is the first important production on the west flank of the Nemaha granite ridge, and thereby has opened a tremendous area for possible other Hunton lime pools. The field possesses the deepest known Hunton lime production, and is the farthest west Hunton lime producing area.

Nine miles separate the producing wells farthest north and south, but the field has not been defined in these directions, and at present development is being undertaken in an area 13 miles long. Within this area is the greatest concentration of rotary drilling rigs in any one field in the world. The producing territory lies in northwestern Oklahoma County, northeastern Canadian County, and southwestern Logan County, and is but a mile from southeastern Kingfisher County.

Phillips Petroleum Company's Cavanaugh 1, 32-15n-4w, Logan County, is the present north outpost producer, with Phillips' Dublin 1, 18-15n-4w, three miles north, as a possible extension well. The Dublin well is a mile southeast of the town of Cashion in Kingfisher County. The present southern limits are in Sections 16- and 17-13n-4w. The present southernmost drilling wells is Magnolia Petroleum Company's Talbot 1, NW 28-13n-4w, which is only a mile from the Bluff Creek water reservoir and 1¼ miles from Gulf Oil Corporation's Harhis 1, a dry hole drilled several years ago. Portions of the field have been defined on the east and west sides, with the Bois D'Arc producing formation missing on the east side and too low to produce on the west.

As of August 30, a total of 126 wells on 40-acre spacing had been completed in the Bois D'Arc section of the upper Hunton lime formation of Devonian age. Two wells had been completed in the Bartlesville sand in the Pennsylvanian, while one well had sporadic production from the Oswego limestone in the Pennsylvanian. Only six dry holes had been drilled in the area.

On August 20 the concentration of heavy-duty drilling rigs reached a total of 101, with 8 additional units scheduled to move in. Virtually all Oklahoma contractors were represented. Others had come in from Texas, Kansas, Arkansas, Louisiana, Montana, Michigan, Illinois, and Colorado. Several concerns are using company tools, but a big majority of the work is on contract. Kerlyn Oil Company is the most active contracting firm with 14 rigs running.

Many more rigs could be utilized to keep up with location requirements. Contractors have been forced to use old equipment and have literally scoured the scrap piles to put together rigs. Some of the contractors have kept their best rigs available for wildcat tests in other areas on account of the availability of repair facilities at Oklahoma City.

Average drilling time, exclusive of rigging up, is about 70 days. About 55 days are required for drilling below surface casing to total depth which varies from 6700 to 7200 feet. Drilling conditions vary throughout the field as 35 to 50 rock bits are used per well.

Contract prices at present are about $6.75 to $7.50 per foot with several contractors now asking $8. Some contractors have experienced difficulty with drill pipe and tool joints. The life of a string of drill pipe has been estimated from 50,000 to 60,000 feet. Tool joints require replacement after two to five wells are drilled.

Power and steam rigs are chiefly used with three-mast type collapsible rigs in operation. Some of the steam rigs date back to the drilling boom in the early thirties in the Oklahoma City oil field.

The drilling water problem has been severe. Until a short time ago the only source of water was from Deer Creek which ran through the field. The creek has an unusually high content of calcium sulfates and other salts which formed scale in boilers, causing many shutdowns. Pipe line systems to bring water from outside sources have resulted.

Under Corporation Commission requirements, surface pipe, usually 10¾ inches, is set at about 400 feet to protect fresh water horizons in the Garber sandstone. Either 5½- or 7-inch flow string is set either on bottom or near the top of the Bois D'Arc section with amounts of cement varying from 600 to 1500 sacks.

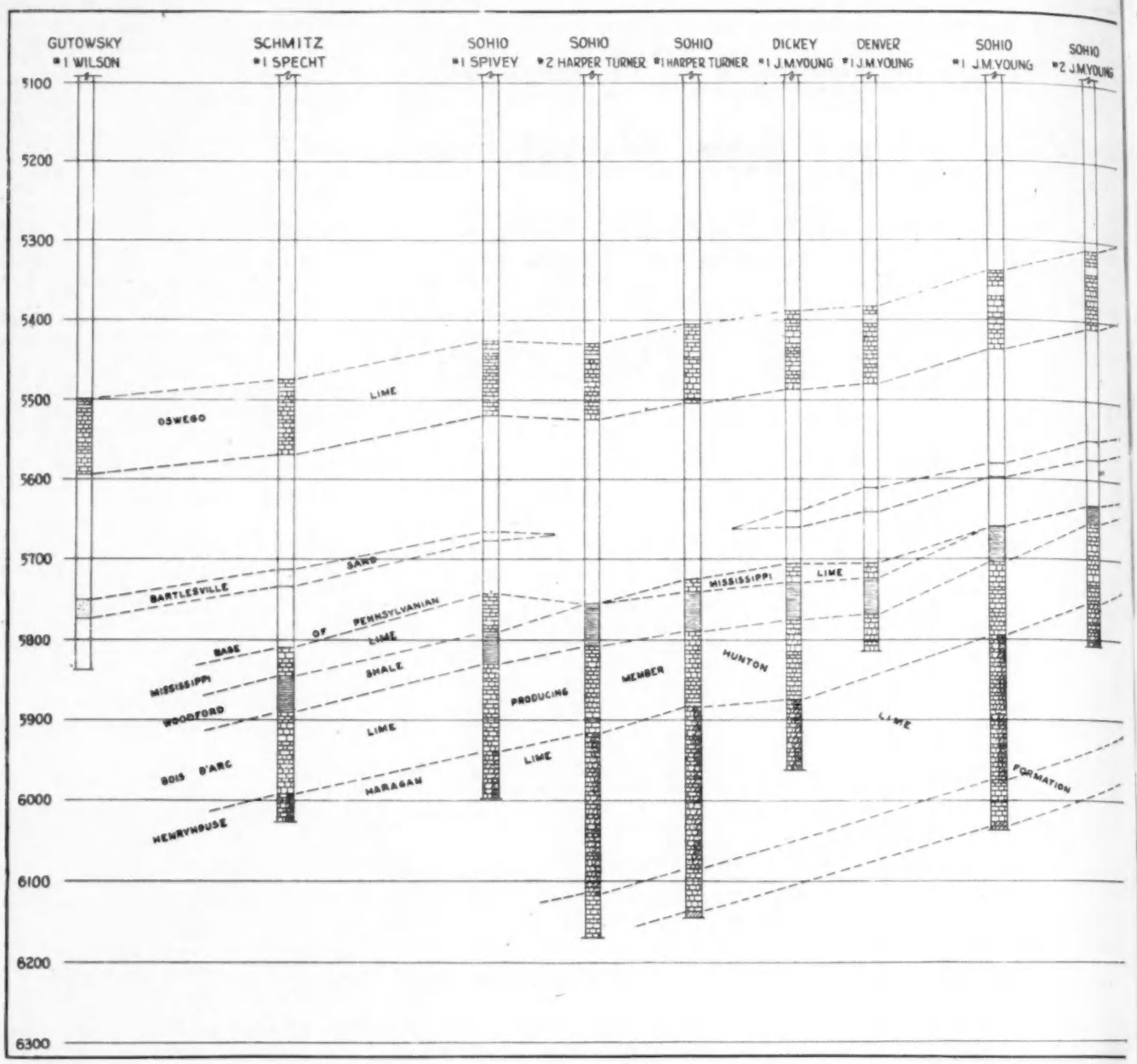
Mud conditioning is important. Several companies have their own mud departments with others relying on service companies. Difficulties in obtaining suitable water complicates conditioning. The viscosity of the drilling mud is gradually increased with depth with initial viscosities starting at 33 seconds and increasing to 43 seconds at 6000 feet where the mud weight is kept at 9.9 pounds per gallon. The higher viscosities are necessitated by the sloughing off of the Pennsylvanian shales.

Proximity of drilling to the Bluff Creek water reservoir which furnishes water to Oklahoma City has caused concern to city officials. The city has filed application with the Corporation Commission for rules and regulations covering drilling and development of the south end of the field about the reservoir and nearby Lake Overholser, the major water supply source for Oklahoma City. Hearing has been set for September 27.

With approximately 90 percent of the wells with casing set through the Bois D'Arc formation, the casing is perforated with an average of 190 to 230 shots generally spaced 3 or 4 to the foot. The customary practice in the field is to allow the casing to wait for cement to set for 72 hours before drilling out. Most operators condition mud by mixing sodium bicarbonate to handle the cement.

A string of two-inch tubing is run in each well before drilling mud is removed by forcing clear water or oil in the tubing. Recently several wells have been

Discovery Well of West Edmond Field



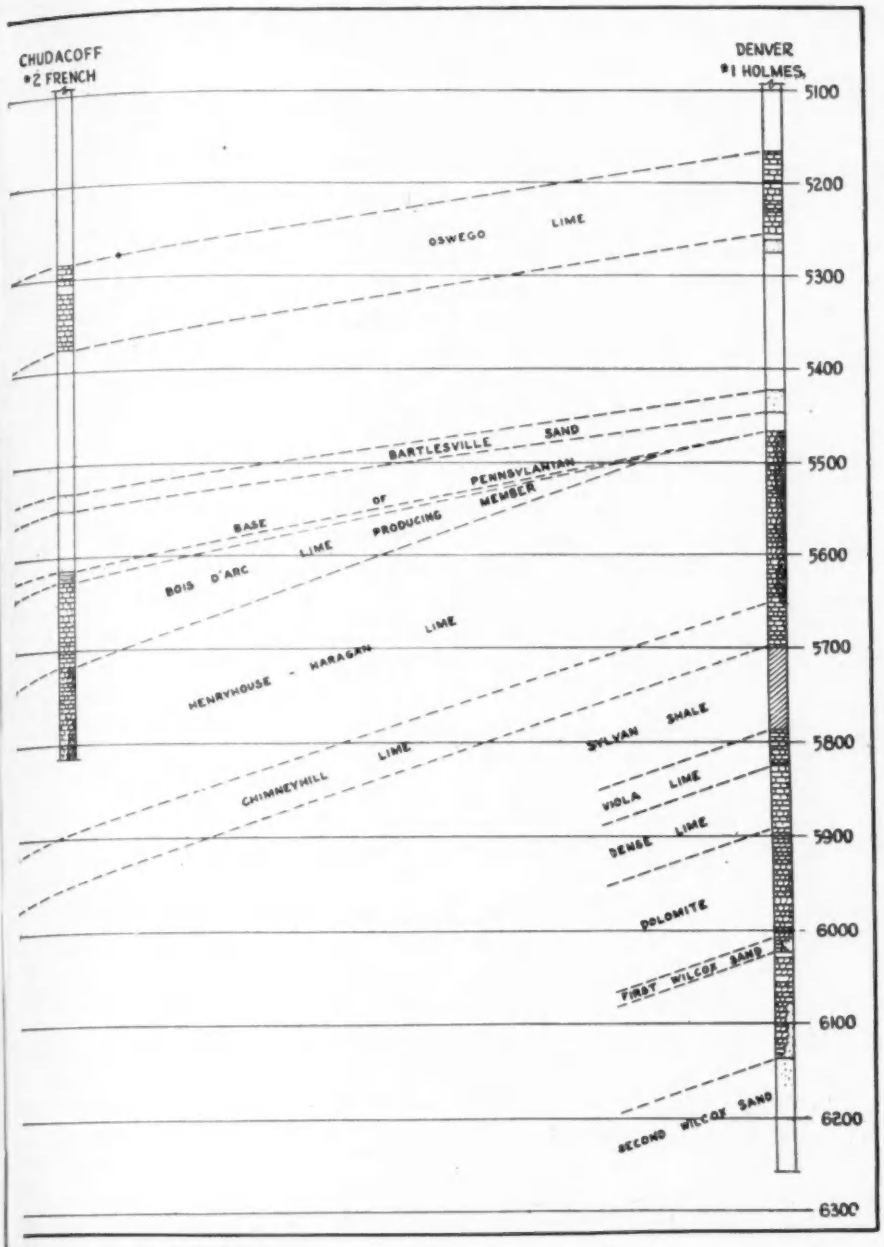
West-East Aeologic Cross Section

completed by reverse circulation by forcing oil down in the annulus between the tubing and casing. The low amount of gas requires separators of 36-inch diameter and 125 pounds working pressure. Leases generally have two high 500-barrel tanks, API specifications, which have tank room for five days' production per well at present allowables. Wells flow their allowables either through positive or adjustable chokes. Chokes vary from 8/64 to 16/64 inch. Some of the smaller wells flow through the tubing without chokes. Chokes are adjusted to flow the 200 barrels allowable in a 24-hour period. Only one well in field is on the pump at the present time. Accumulated production to August 20 was 3,208,000 barrels.

The field was discovered in April, 1943, by Ace Gutowsky, D. D. Bourland et al's Wagoner 1, NW NW SW 32-14n-4w, which made 520 barrels daily through a 9/32-inch choke on 2½-inch tubing. The casing pressure was 1050 pounds and the tubing pressure 350 pounds per square inch. The bottom hole pressure was 3130 pounds per square inch.

The Wagoner well drilled a normal upper section in the Permian and Pennsylvania age formations. The Bartlesville sand was cored, as well as the Mississippi limestone, without success. The Hunton lime was topped at 6877 feet, with a small showing of oil reported. No core was taken, and drilling proceeded to 7695 feet where an electrical survey was run. The well was shut down for orders since both the first and second Wilcox sands of Ordovician age had proved unproductive. The first Wilcox was found at 7508 feet and the second Wilcox was encountered at 7640 feet. A decision was made to test the Hunton and casing was set and cemented at 7103 feet. The well was plugged back to 7044 feet, and the casing was perforated between 6951 and 6956 feet with 11 shots which yielded an estimated 5,000,000 cubic feet of gas and enough oil to make a few small flows. Continued testing resulted in a total of 47 shots placed between 6938 and 6956 feet before the well was a completion.

The pre-Pennsylvanian map, stripped of all formations down to and including the base of the Pennsylvanian, shows the estimated probable extent of the field to cover a length of 24 miles with an estimated width of five miles in Sections 7, 8, 9, and 10 in T. 14 N., R. 4 W., and Section 12 in T. 14 N., R. 5 W. This map, prepared March 10 by Kenneth Ellison, Oklahoma City consulting geologist, is checking closely with current development. A rough calculation of the estimated productive area indicates the field will embrace 32,000 acres which is more than twice the area of the Oklahoma City field. The map indicates the approximate water level on the west side to follow the minus 6000-foot contour. Recent development indicates the salt water level to be approximately minus 5900 feet. The Denver Producing & Refining Company-Bailey dry hole in Section 19, T. 13 N., R. 4 W., found the Bois D'Arc section at minus 6012 feet, too low to produce. This well had 19



of West Edmond Field, Oklahoma

feet of Frisco limestone and 120 feet of Bois D'Arc limestone.

A study of the stratigraphy of the field reveals that the surface formation is the Hennessey shale of the Enid group in the lower Permian. The Garber sandstone underlying the Hennessey shale does not outcrop in West Edmond. It is interesting to note that the Edmond field structure, opened in 1930, was mapped on the contact between the Garber sandstone and the Hennessey shale.

The Garber sandstone is approximately 375 to 450 feet thick. It consists of a series of massive, fine-grained sandstones separated by thin red shale beds. Large quantities of soft water are found in the Garber in the Edmond field three miles east.

Beneath the Garber is a series of red shales and fine-grained sandstones known as the Wellington, which is about 700 feet thick. The Stillwater formation underlies the Wellington. The Stillwater is characterized in the color change from red to dark brown in the shales. At the base the Neva limestone is found with a thickness from 10 to 30 feet. The Neva formation is placed at the base of the Permian, which averages about 2500 feet thick in the West Edmond area.

In the Pensylvanian, about 700 feet below the Neva, the Pawhuska series of three heavy limestones with intervening shales and sands constitute the first important marker in samples of drill cuttings. Other markers in the Pennsylvanian are the Oread, Tonkawa, Avant, the Oklahoma City Checkerboard, First Oolitic, and Oswego limestones. The Bartlesville sand below the Oswego is present in many wells with evidences of good saturation and produces in the Sohio-Cargill No. 1 and Gutowsky et al-Wilson No. 1 wells.

The post-Mississippian interval of erosion removed some of the Woodford shale and chert of Devonian or Mississippian age except some Misener sand and much of the Mississippi lime. (The term Woodford is used in central and southern Oklahoma, while the term Chattanooga is used in northern Oklahoma and Kansas.)

The Hunton limestone has been subdivided into four distinct formations—Frisco, Bois D'Arc, Haragan-Henryhouse, and Chimney Hill. The Frisco limestone, the topmost unit, has been identified in only one well in the field. The Bois D'Arc limestone in the field appears to average about 70 feet thick but is 150 feet thick in some portions of the field. Milk white translucent chert or flint is present in the upper part. Portions are dolomitic and crystalline. It is difficult to estimate the saturation percentage and porosity on account of the difficulty in obtaining cores. One estimate is that the porosity is about 10 to 15 percent with the saturation about 50 percent.

An interesting feature is the erosional valley or stream channel which removed much of the Bois D'Arc section in a narrow area extending from Section 34 in T. 14 N., R. 4 W., through Sections 33, 28, 29, 30, and 31 in an east and west direction. Several dry holes and light wells have been drilled in the so-called gully. Apparently a small stream traversed the area in the period of geologic time when the Hunton was undergoing erosion. A similar gully exists in the north part of the old Edmond field.

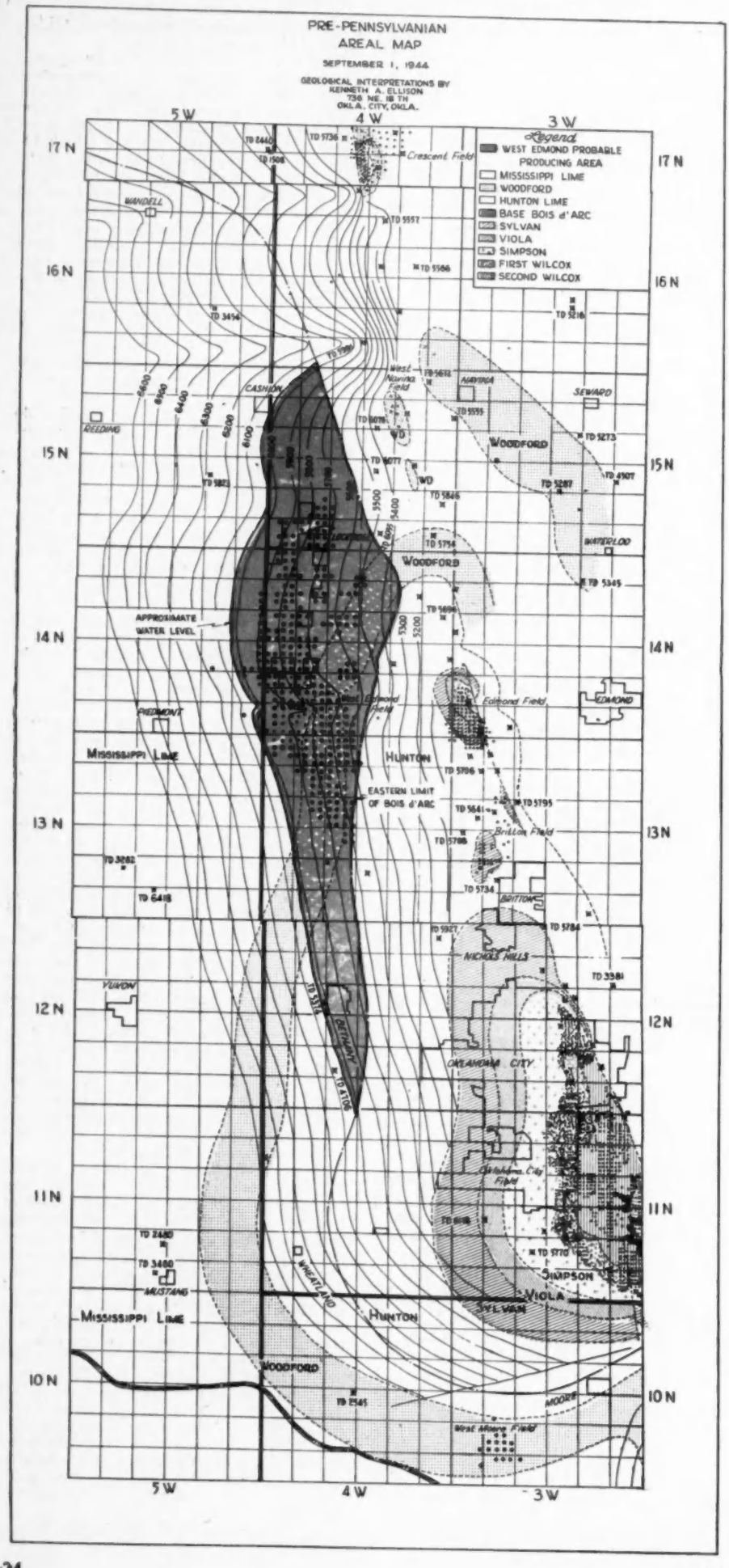
Wells drilled below the Hunton penetrated the Sylvan shale of Ordovician age which had a thickness of 100 feet in the discovery well. Fifty-five feet of viola limestone were found in the discovery well. Below the Viola, the Simpson dense limestone was encountered before reaching the first and second Wilcox sands in the Simpson of Ordovician age. No wells have been drilled past the Wilcox to determine whether any production is in the Arbuckle limestone.

The field has been under the jurisdiction of the conservation program administered by the Oil and Gas Department of the Oklahoma Corporation Commission. On July 19, 1943, the Corporation Commission issued an order establishing 40-acre spacing for the development of the field and established rules and regulations. This order required the flow string be set at the bottom of the well. Each well was required to be equipped with 2½-inch tubing. The field gas-oil ratio was set at 2000 feet per barrel.

The requirement of setting flow string of casing on bottom was changed in Order 16,782 on December 16, 1943, to permit the flow string to be set not higher than the top of the producing formation. This order also required gas-oil ratio tests to be taken on each well at least once each 90 days.

These orders were amended on July 13, 1944, when Order No. 17,082 extended the probable area (27 miles in length) of the field and eliminated the provision for a cement plug to be placed at the base of the Garber sandstone on abandoned wells. The order also provided that the allowable production of each well with a high gas-oil ratio to be multiplied by the gas-oil ratio of 2000, and divided by the actual gas-oil ratio of each well to determine the allowable production. Production tests were required on every well at least every 90 days to determine whether it can make its allowable. New wells were required to take production tests to determine ability to make allowable and effective date of allowable schedule. Gas purchasers were required to file monthly reports.

The discovery well of the field was



granted a year's discovery allowable of 98 barrels per day in addition to the field allowable of 300 barrels per day. On May 1, 1944, the field allowable was cut to 200 barrels per day per well to conserve reservoir energy. At present the field is producing over 20,000 barrels per day.

A close check is being maintained of the bottom-hole pressure. In March, 1944, the average bottom-hole pressure on key wells was 2969 pounds per quare inch. Results of a recent survey showed that during a 90-day period pressure dropped 86.57 pounds or less than a pound a day, computed at 1 pound per 16,848 barrels of oil withdrawal. The pressures average between 2800 and 2900 pounds. The West Edmond Operators Engineering Association with a full time engineer, Glenn Stearns, is assembling all available information for a continuing study of the field. Stearns was formerly professor of petroleum engineering at the University of Oklahoma. Data are not available to determine just when the field will resort to artificial lift, but estimates indicate that the pressure will decline to 1000 pounds or less before that stage is reached. Every effort will be made to keep the field flowing as long as possible. No evidence of a water drive is noted thus far, although water encroachment is appearing on a portion of the west side of the field. The gas in the field appears to be coming out of solution in the oil. Data are not available on several bottom-hole samples taken in the field.

Peppers Refining Company in August began work on a 10-million-foot capacity natural gasoline plant in the center of the field. Portions of a gathering system have already been laid. Phillips Petroleum Company, upon the discovery of the field, extended gathering lines from their plant in the Edmond field. Both companies have been furnishing gas for fuel at drilling wells. The natural gasoline content of the field is about a gallon per thousand cubic feet.

West Edmond has always enjoyed favorable oil transportation facilities. Cimarron Valley Pipe Line Company, a subsidiary of Champlin Refining Company, traversed the east side of the field with its trunk line from Oklahoma City to its refinery at Enid, 90 miles. PAW has permitted no other pipe lines to be built to the field.

Estimate of Reserves

Various reserve estimates show general disagreement among geologists and engineers. The "leap frog" nature of field extensions left considerable inside locations to be drilled. Several erratic spots have appeared to add to the difficulty in estimating reserves. Per-acre estimates on individual leases range from 3000 to 17,000 barrels. In a signed article, Claude V. Barrow, oil editor, Oklahoma City Oklahoman, estimated the field's reserves to be 117,000,000 barrels as of August 1, 1944, with 99 wells completed. The August 1 estimate, made by a reputable geologist, was based on an area of 13,000 productive acres with an average recovery of 9000 barrels per acre. Mr. Barrow quotes estimate of another geologist to include 28,800 acres with an average recovery of 5000 barrels per acre or a total reserve of 144,000,000 barrels. Operators in Oklahoma have generally given the Hunton 6000 to 7500 barrels per acre predicated on 10-acre spacing.

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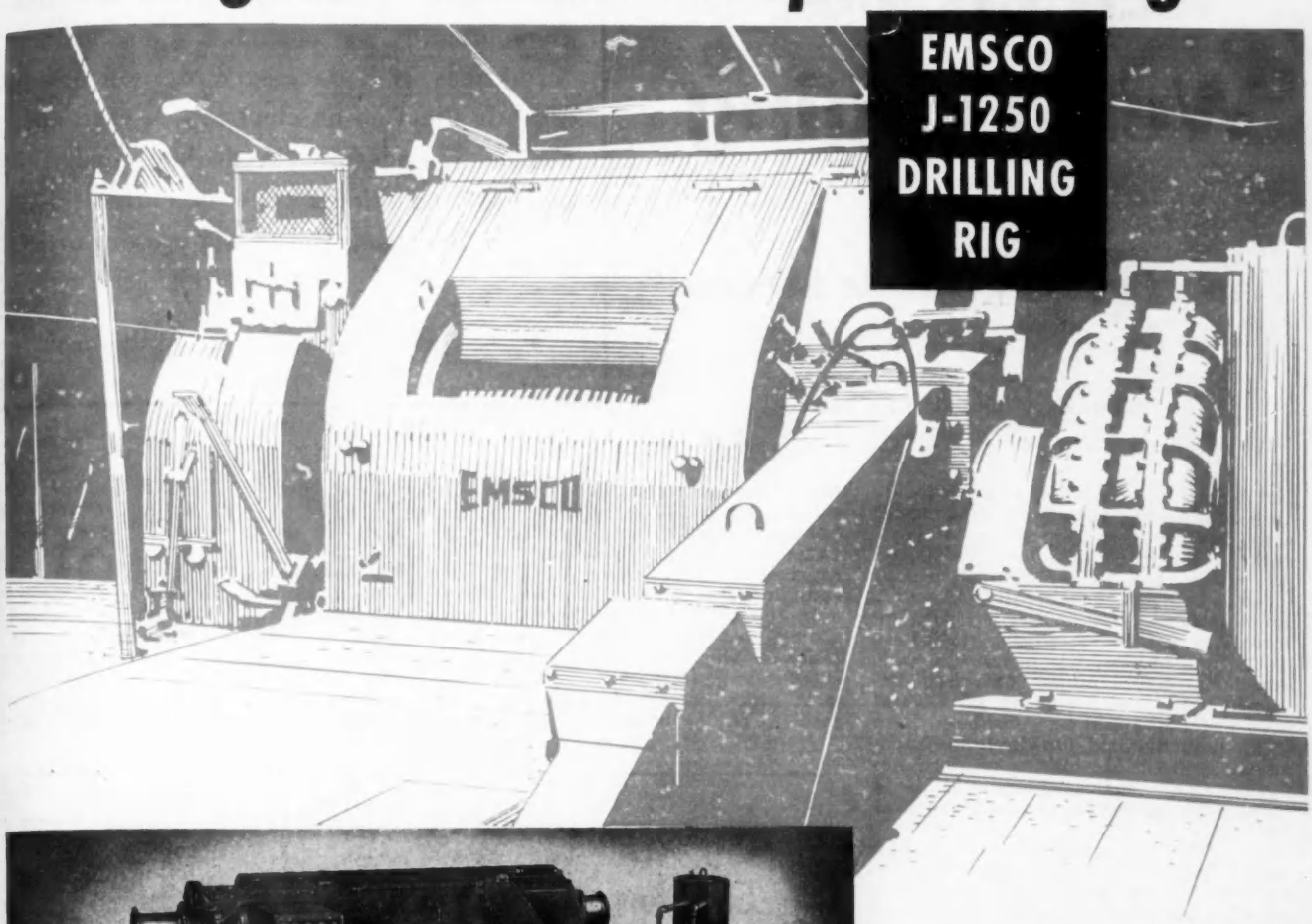

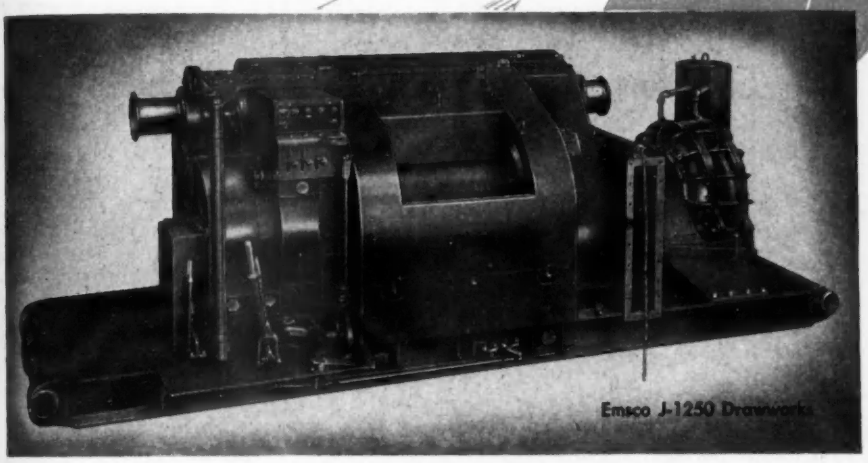
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Electrical Well Logging

PART 7

The Three-Electrode Method

(Continued)

Although, in general, conductive beds are, commercially, less important than resistant formations, it is necessary to know how to identify them on an electric log, even when they are invaded by the drilling fluid. This subject, and related topic of current penetration, are discussed in the present article

By HUBERT GUYOD
Development Engineer
Halliburton Oil Well Cementing Company
Duncan, Oklahoma

Logging of Conductive Beds

IT HAS been explained previously that it is often convenient to consider only the relative resistivity of beds, rather than their absolute resistivity. When this is done, it is logical to consider as being conductive all beds which are less resistant than the surrounding formation used as reference, regardless of the resistivities. For instance, a porous lime of 200 ohms comprised between tight lime sections of several thousand ohms will be considered here as a conductive bed. On the other hand, an oil sand of 20 ohms, comprised between shales whose resistance is 2 ohms, will be assumed to be a resistant bed.

An excellent qualitative discussion and a reasonably accurate quantitative analysis of the logging of conductive beds by the three-electrode method can be made from calculated curves only, namely, without taking into account the influence of the drilling mud. These curves are shown as solid lines in the accompanying figures. The standard arrangement was assumed to be used (i.e., current electrode C placed above pick-up electrodes P_1P_2) and the distance P_1P_2 was considered to be infinitely small. The dotted lines of the figures represent the true resistivity of the formations. In addition, there has been shown, as dash line curves, the curves which most likely would have been obtained if the influence of the bore fluid had been taken into account. These curves were established from the computed curves and from data given by actual logs. Although these assumed curves may be inaccurate occasionally, it is likely that the errors are small and negligible.

All these logs refer to beds nine times more conductive than the surrounding medium, and all formations are assumed to be homogeneous and isotropic. The relative resistivity of the center bed is

$$\frac{\rho_2}{\rho_1} = \frac{1}{9} = 0.11$$

As pointed out above, this could represent the porous section of an otherwise tight lime. It could also represent a salt water sand imbedded in shales. For the sake of simplicity, the center section will be called "salt water sand," or "sand," whereas the upper and lower formations will be designated as "shales."

Thick Beds. The case of a conductive bed infinitely thick will be examined first. This conductive bed is represented on the right side of Figure 7-1 by a non-cross hatched area comprised between cross hatched areas, the latter representing the more resistant surrounding formations. The response of a three-electrode arrangement on a resistant bed infinitely thick, the resistivity of which is nine times that of the surrounding formation, was discussed in a preceding article (Part 6 of the series). The resulting log has been redrawn here on the left side of Figure 7-1. Referring to this log, it can be seen that in the vicinity of the top contact B, the electrodes are so far from the bottom contact H that the influence of the bottom shale section HK on the measurement is absolutely negligible. The top section ABC'D of the curve to the left represents nothing more than the curve obtained at a contact B between a given formation A, and a more resistant formation C'D, both being ex-

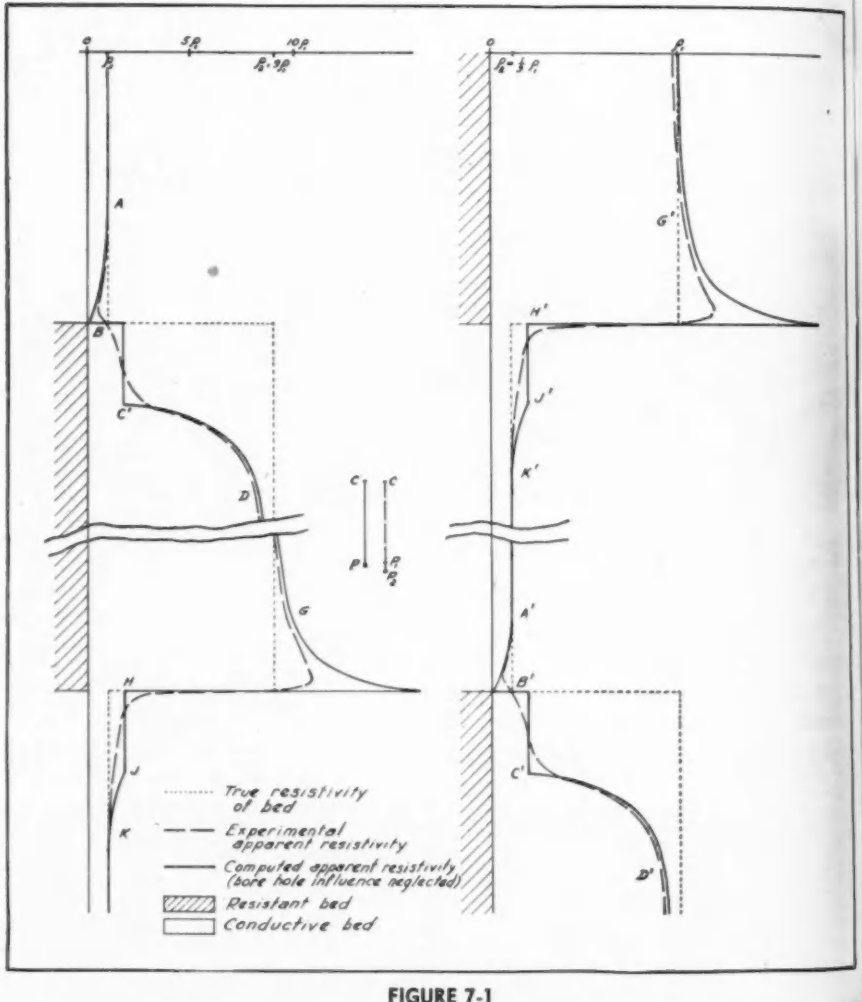

FIGURE 7-1
Three-electrode log on very thick conductive bed (right) derived from corresponding log in resistant bed (left).

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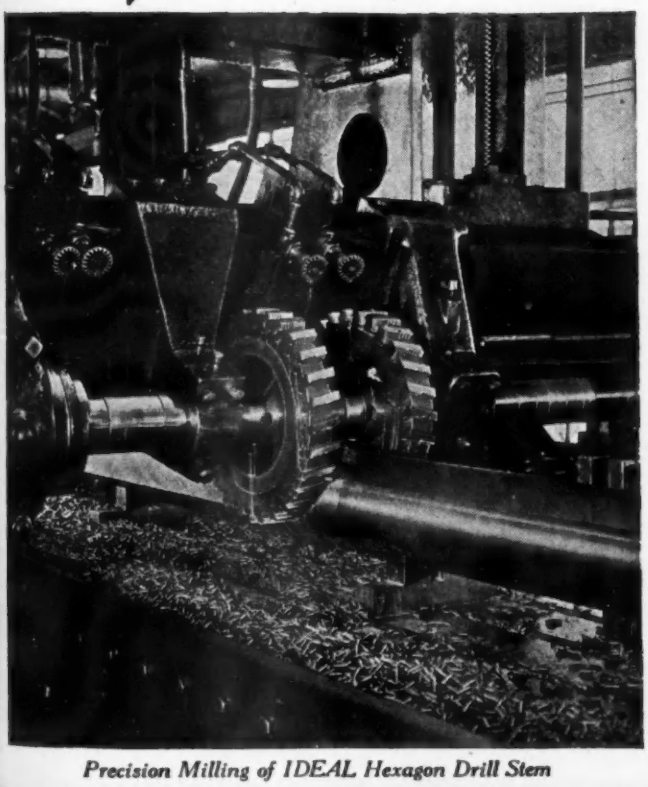

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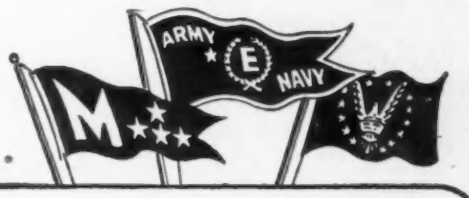

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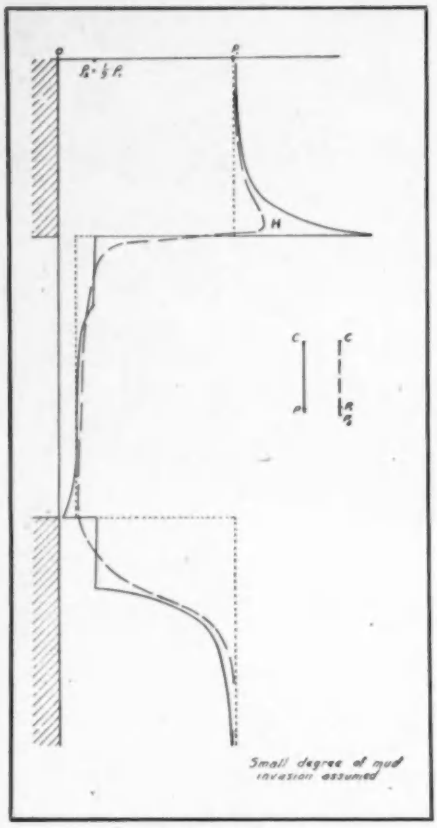


FIGURE 7-2

Three-electrode curve (standard arrangement) of a very thick bed nine times less resistant than the surrounding formation.

tremely thick. This section of the curve, then represents the log which would be obtained near the bottom part of a very thick conductive bed, for instance, the bed shown on the right side of Figure 7-1. This log has therefore been copied as curve A'B'C'D' at the right bottom of the figure. For the same reason, the top part G'H'J'K' of the right hand side curve must be identical to the bottom section GHJK of the left curve, and it has been plotted on the figure accordingly. The whole solid line curve G'H'J'K'A'B'C'D' is then the calculated log for a conducting bed of infinite thickness. The resistivity scale of this log will have to be graduated in multiples of ρ_1 as was done before for Figure 6-2. It is important to note, however, that the shales on the curve to the right seem to be more resistant than those of the left curve. This is because the log was drawn without regard for the absolute ohm scale. In fact, this curve is a universal curve, where the absolute resistance values are not considered. If, however, a log where the resistance values in shales have the usual deflections in inches on the paper is desired, then it would of course be necessary to compress the ohm scale of the right hand curves nine times. For the sake of clarity in the figures, the enlarged scale will be used in all the logs related to conductive beds.

If the bed is very thick, but of finite thickness, the log would be almost identical to that described above. If the pick-up span were not infinitely small, and if the influence of the drilling fluid were taken into account, the resulting curve would be smoothed out

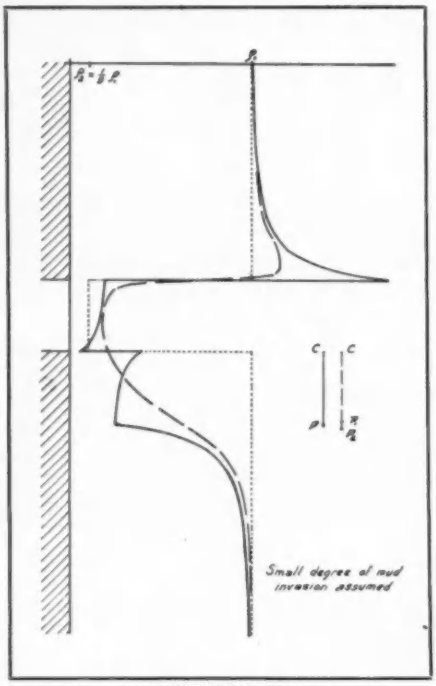


FIGURE 7-3

Three-electrode curve (standard arrangement) of a bed of medium thickness 9 times less resistant than the surrounding formation.

and would be as indicated schematically by the dash line curve.

The method used to establish the log to the right of Figure 7-1 shows that the three-electrode curve, on a thick conductive bed is basically the same as that obtained previously for a resistant bed, except for a few changes in the composition of the curve. There will therefore be no need for discussing this log in detail, and we shall limit the discussion to its fundamental features.

In the center of the bed, the apparent resistivity very nearly equals the true resistivity. Near the contacts

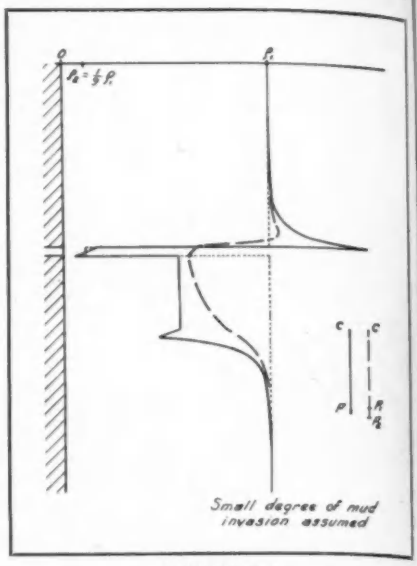


FIGURE 7-4

Three-electrode curve (standard arrangement) of a very thin bed nine times less resistant than the surrounding formation.

only, do these two values diverge. The top contact of the bed is characterized by a sharp break in the curve, and can therefore be picked with accuracy on the log. The bottom contact is vague; the only sharp break to be seen near the bottom of the section is situated below the lower boundary and at a distance equal approximately to the electrode spacing. The apparent thickness of the bed is therefore greater than the actual thickness. This is just the opposite from what is found in resistant beds, where the apparent thickness is less than the true thickness.

If the bed is not infinitely thick, but has, for instance, a thickness equal to four times the electrode spacing, the apparent resistivity log is little different. It is shown on Figure 7-2. It

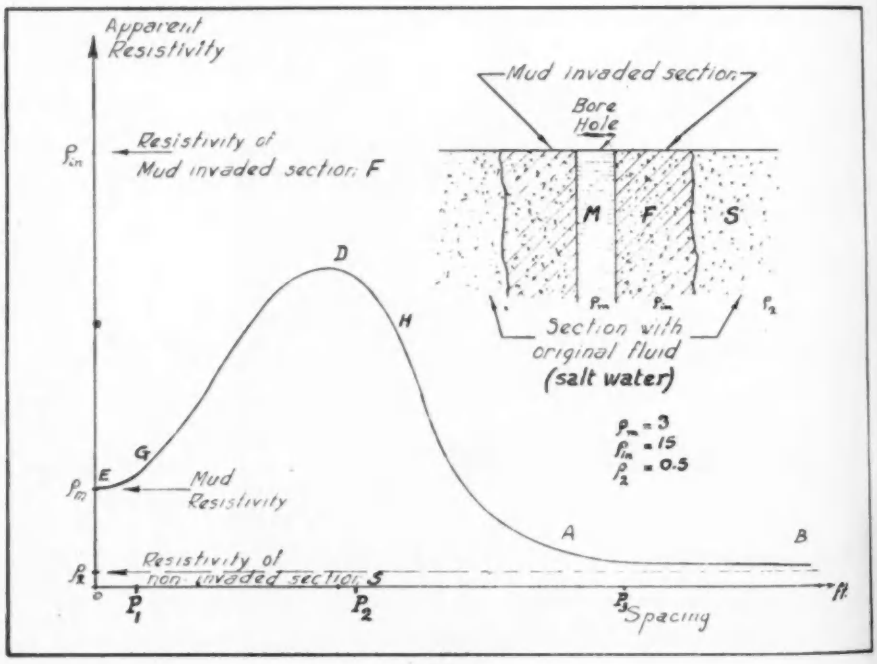
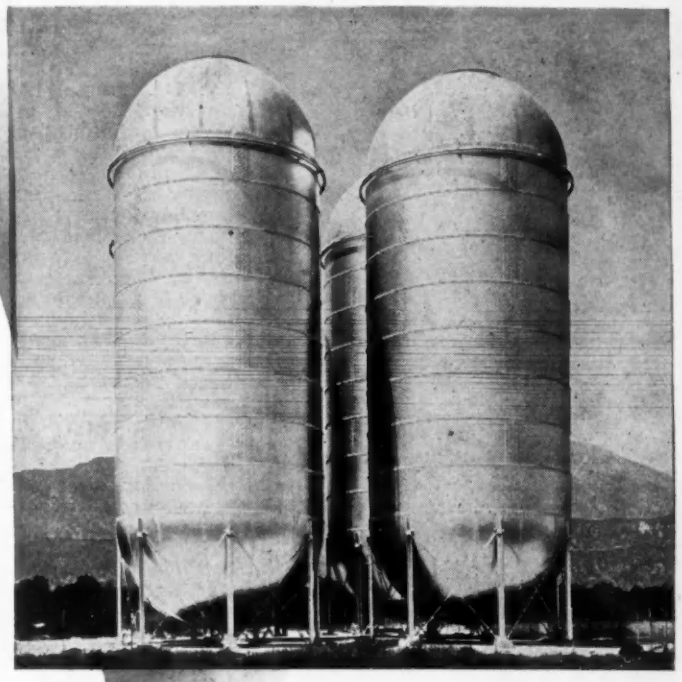


FIGURE 7-5

Changes in apparent resistivity in terms of electrode spacing for a mud-invaded salt water sand (schematic).



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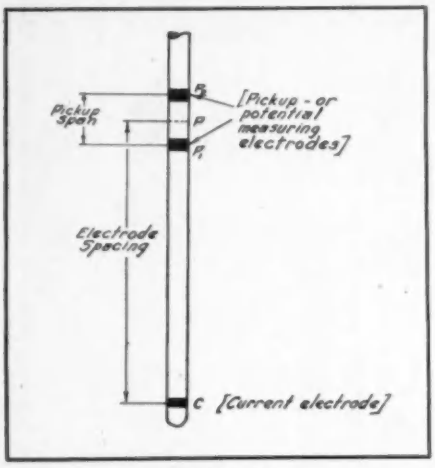


FIGURE 7-6

Electrode spacing and pickup span of a three-electrode configuration. (Inverted arrangement).

can be seen that the apparent resistivity near the center part of the curve nearly equals the true value.

Thin Beds. Conductive beds of relative thickness 1 and 0.1 are shown on Figures 7-3 and 7-4 respectively. These figures show that, when the bed thickness is decreased, the minimum value of the apparent resistivity increases slowly, but is never very different from the true value unless the bed is extremely thin—one-twentieth the spacing length or less. This is a rather surprising result when one remembers how the apparent resistivity of thin resistant beds is different from that of thick resistant beds. There is therefore no real critical thickness when logging conducting beds.

Below the bottom contact of the salt water sands of Figures 7-1 and 7-2, the apparent resistivity returns only gradually to the resistivity of shales (section B'C'D' of Figure 7-1). The vertical extension of this section of relatively low apparent resistivity is equal approximately to twice the spacing. This peculiar response is characteristic of the 3-electrode arrangement (standard type) and can be seen on Figures 7-3 and 7-4 also.

If the relative resistivity of the sand is different from 1/9, the numerical values obtained are, of course, different, but the corresponding 3-electrode curves are basically the same as those illustrated. In particular, the minimum apparent resistivity shown on the log is, in general, of the same order as the true resistivity of the bed.

Mud Invaded Sands. The preceding discussion was made with the assumption that the conductive sand sections were roughly homogeneous, which implicitly meant that they were not invaded by the drilling fluid. When a salt water sand is invaded by a relatively fresh mud, the original salt water is displaced by the mud filtrate. The volume occupied in the sand by this filtrate has the shape of a thick cylinder centered on the bore axis. The influence of this resistant cylinder is primarily to increase the apparent resistivity.

In general, the resistivity of a sand equals approximately five times the resistivity of the fluid it contains. For instance, if the salt water contained in a certain sand has a resistivity of 0.1 ohm, the sand, when filled with this fluid, will have a resistivity of approxiproximately 0.5 ohms. Now, if a drilling mud of resistivity 3 ohms displaces the original salt water, the contaminated section of the sand will have a resistivity of about 15 ohms. Under these conditions, the resistivity distribution, around a bore hole, of a mud contaminated salt water sand is schematically as shown by Figure 7-5. Starting horizontally from the axis of the bore, there is a zone M a few inches long having a resistivity of 3 (drilling mud). Then there is a zone F of resistivity 15 (mud invaded section); its extension is variable and of the order of 1 foot, for instance. Farther out there is a zone S of resistivity 0.5 (non-invaded section).

Mud Invasion

When the mud invasion is small and the electrode spacing relatively large, the zone F can be disregarded, and the two-electrode curves are nearly the same as those of Figures 7-1 to 7-4. The main difference is that the height of the hump H (see Figure 7-2) situated immediately above the sand section is reduced. The resulting curve is then slightly less distorted than that which would be obtained if the sand were not mud invaded. If the mud invasion is large, or if the electrode spacing used is relatively short, then, in addition to the reduction of the hump H, the apparent resistivity is different from that of the curves discussed before. Its value is increased according to the amount of mud invasion and the spacing length. This is schematically illustrated on the left side of Figure 7-5, which shows a curve giving the changes in apparent resistivity in terms of spacing for a thick sand. When a very short spacing CP_1 is used, the log gives a resistance related mostly to the drilling fluid contained in the bore hole (part EG of the curve). If the spacing is increased from P_1 to a larger value P_2, the influence of the resistant invaded section becomes preponderant and the log gives an abnormally high apparent resistivity (point D of the curve). The value of P_2 is usually of the order of 2 feet. If the spacing is further increased to P_3 for instance, the apparent resistivity decreases slightly at first (part DH of the curve), then it comes asymptotically to the true value ρ_2 of the non-invaded zone (part AB of the curve). The value of P_3 depends upon the amount of mud invasion. It should be understood that Figure 7-5 is very schematic, and that it corresponds only to the case of very thick beds. For thinner beds, the problem is a little more complicated, and the asymptotic value of the apparent resistivity remains always greater than ρ_2.

The foregoing discussion shows that when electrode spacings of increasing length are used (beyond P_2), the apparent resistivity of a mud-invaded salt water sand gradually decreases when the spacing increases. The converse is quite often true; namely, when the ap-

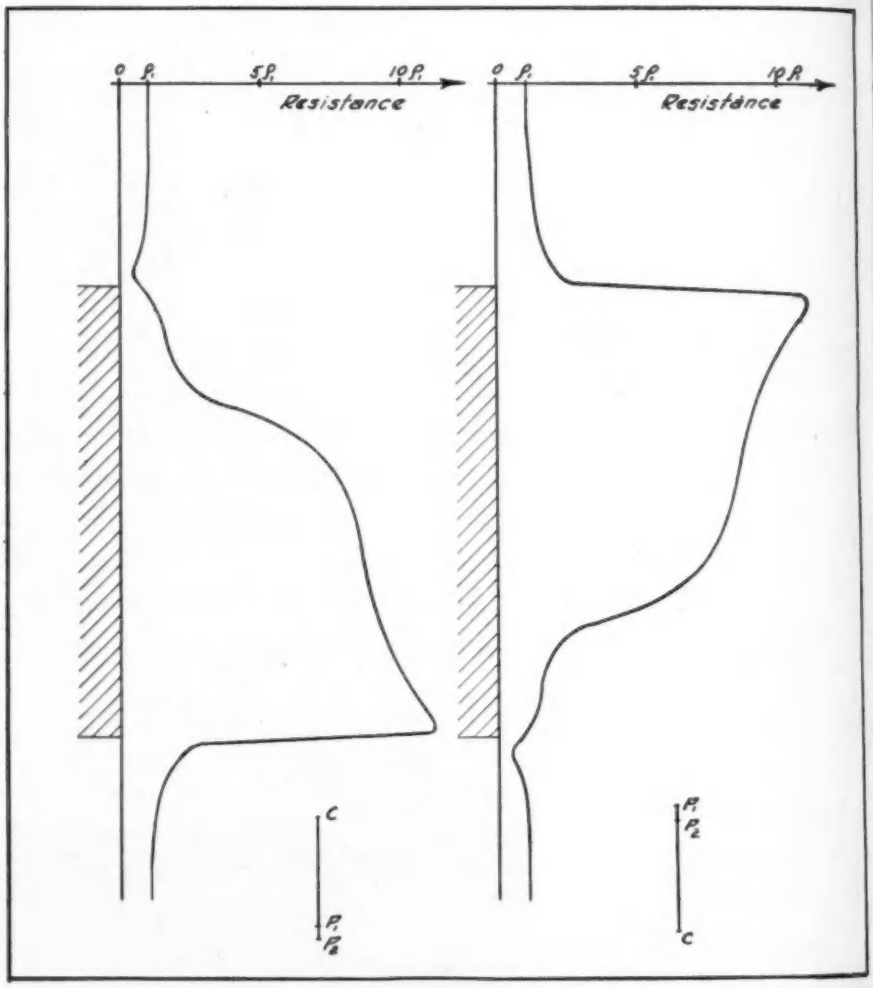
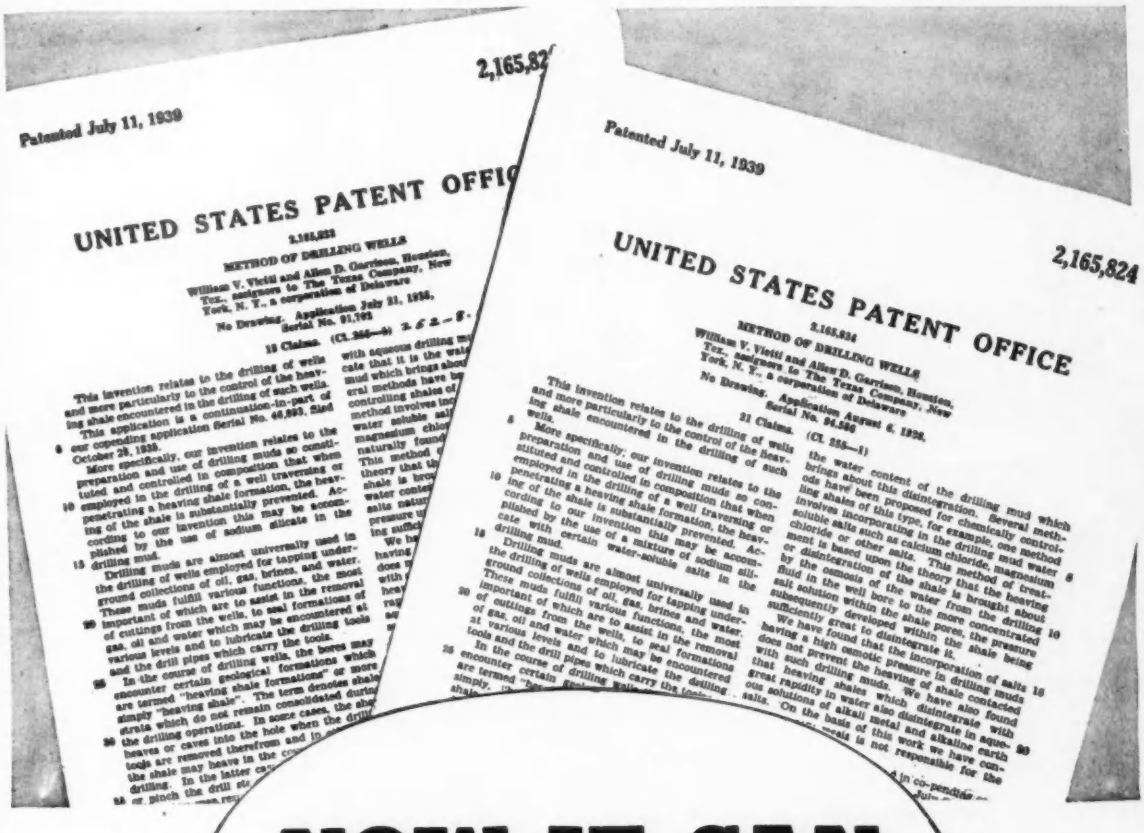


FIGURE 7-7

Comparison between curves given by standard (left) and inverted (right) arrangements. (three-electrode method).



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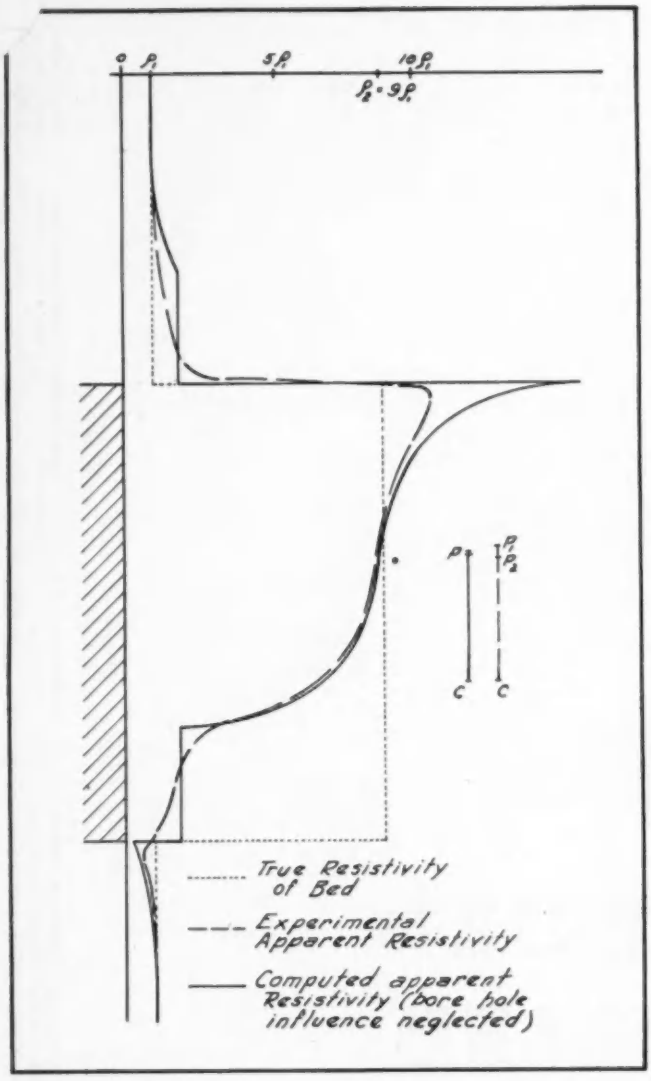

FIGURE 7-8
Typical log for thick resistant bed obtained with an inverted three-electrode arrangement.

parent resistivity measured by the three-electrode method decreases when larger and larger spacings are used, there is a good probability that the object sand is a salt water sand invaded by the drilling fluid. There are exceptions, however, as will be shown in a later article, and therefore the foregoing rule should be applied cautiously.

In practice, a three-electrode spacing is always selected of sufficient length so that the apparent resistivity corresponds usually to the section AB of the curve; consequently, the apparent resistivity is close to the true value and there is, in general, no ambiguity when interpreting the log.

Current Electrode Below Pick-up Electrodes

In the preceding discussions regarding the three-electrode method, it has been assumed that the current electrode was above the potential measuring electrodes. This particular arrangement—usually called the standard arrangement — has two important advantages; namely,

1. It permits having a log to the bottom of the hole.
2. This log has a sharp break at the bottom of resistant sections, and this break is positioned at the correct depths. This is of great value when oil-water contacts have to be determined.

The method has, however, a limitation; it does not give a log below casing on a length equal to the electrode spacing. Although this is without importance in a considerable number of cases, it happens sometimes that a log is desired immediately below the casing shoe, for instance, in work-over jobs. It is then necessary to change the electrode arrangement in order to obtain this result. This is achieved by simply placing the current electrode below the pick-up electrodes as shown on Figure 7-6. As this particular electrode configuration — usually called "inverted arrangement"—is sometimes used in the field, it is well to know the fundamentals of its behavior. These are easy to understand when one remembers that the inverted arrangement is identical to the standard one, but turned upside down geometrically. In a homogeneous bed, the resulting log should therefore be identical to the curve obtained with the standard electrode, but turned upside down. This is shown on Figure 7-7 where the right curve is the theoretical log of a thick homogeneous bed obtained with the inverted arrangement, whereas the left curve is that obtained with the standard arrangement. If the bed is not homogeneous, there is not perfect geometrical symmetry between the curves given by the two types of arrangement. The fundamental character of an inverted curve can, however, be obtained approximately when the section is not too broken by turning the standard curve upside down.

Computed and experimental curves obtained with the inverted arrangement on resistant beds of relative thickness 4, 1, 0.1 are given by Figures 7-8, 7-9, and 7-10 respectively.

It is clear, from an inspection of Figure 7-8, that the top contact of thick beds is sharply defined on the log given by an inverted arrangement

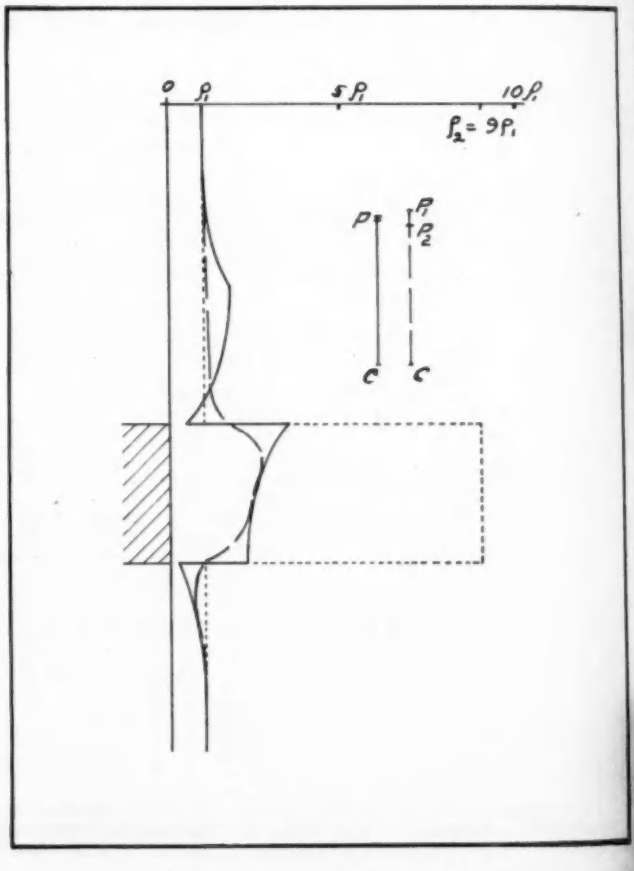

FIGURE 7-9
Typical log for a resistant bed of critical thickness, obtained with an inverted three-electrode arrangement.

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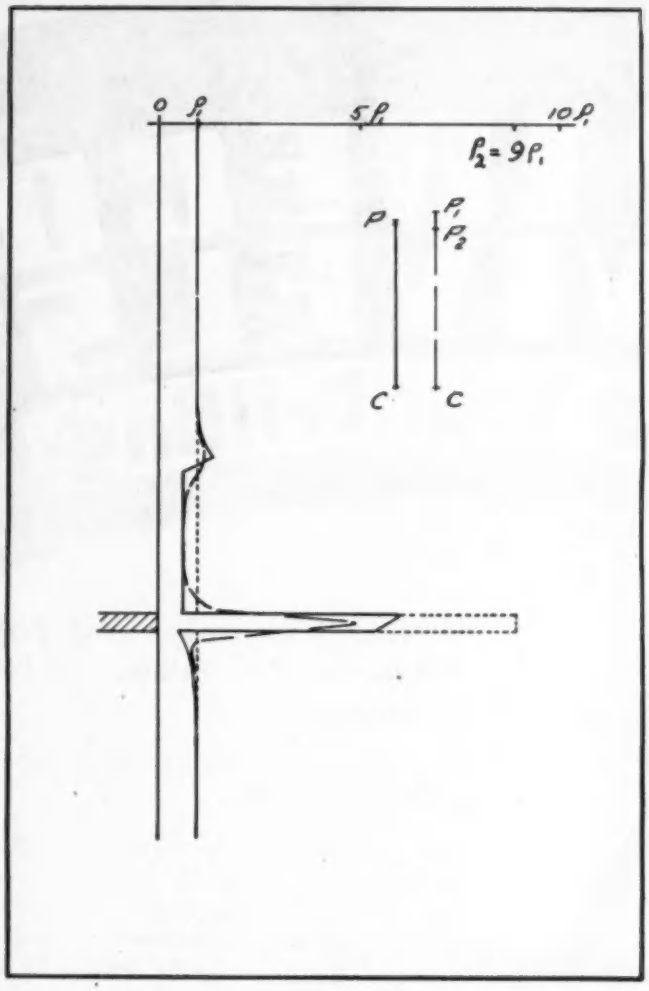

FIGURE 7-10
Typical log for a thin resistant bed obtained with an inverted three-electrode arrangement.

whereas the bottom contact is difficult to see. In the case of thin resistant beds, both contacts are usually sharply defined unless the pick-up span is abnormally large (Figures 7-9 and 7-10).

The logs made with an inverted arrangement have the same distortions as those observed when a standard arrangement is used, but of course they are transposed. In particular, the shale section immediately above thin resistant beds consists of an abnormally low section surmounted by a small peak (Figure 7-10). This behavior is characteristic of an inverted three-electrode curve.

In the case of conductive beds, their bottom boundary is clearly indicated on the log, whereas the top one is difficult to see, as shown on Figure 7-11. In the shales situated immediately above the sand, the apparent resistivity is abnormally low, which gives the sand section an apparent thickness larger than the correct value.

The inverted arrangement being identical to the standard one in every respect, except for the orientation of the resulting curves, neither a detailed discussion of the method, nor more sample curves need be given here.

Current Penetration

The concept of current penetration is intuitively grasped by those familiar with electric logs. When, however, a numerical value of the penetration is desired, or when only a simple qualitative explanation of this phenomanon is attempted, great difficulties arise immediately. We shall endeavor in the following paragraphs — although in a very imperfect manner — to clarify somewhat this concept of penetration.

In preceding articles it has been briefly explained that potential or resistance measurement taken at a distance d from a current electrode C do not yield information related only to the materials situated beyond a sphere of radius d and centered at C. This result is strictly applicable, however, only when one has to deal with a spherical resistivity distribution which, of course, is never obtained in practice. This explanation, although not very correct for actual logging, had nevertheless the advantage of explaining simply why multiple-electrode arrangements using long spacings give information related to materials situated at a relatively great distance from a current electrode. Attempts will be made now, to explain this point in somewhat greater detail.

Perfect insulators probably do not exist; therefore, every material must conduct the electric current to a certain degree. When two energized electrodes C and C′—see Figure 7-12—are placed in a three-dimensional medium (homogeneous or not), the current leaving C and returning to C′ is not confined to a narrow spindle-shaped zone extending from C to C′, but it spreads everywhere in the conducting medium. There is no part of this medium, however small, however resistant, or however remote, which does not receive its share of the current. (Strictly, the pattern given by Figure 7-12 is valid only for direct current, or very low frequency alternating current. When high frequencies are used, the present dis-

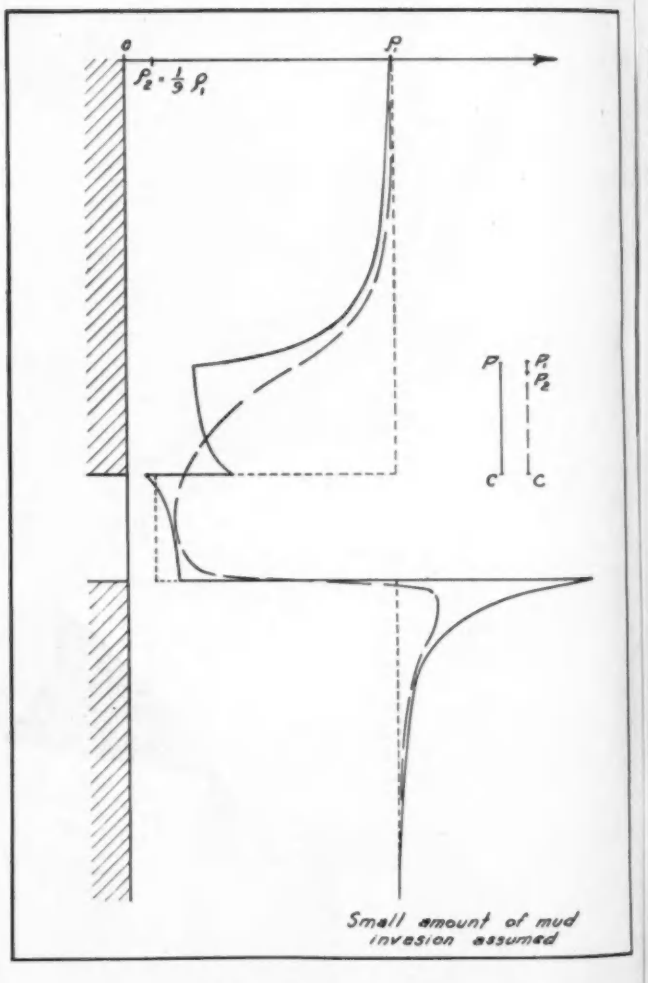

FIGURE 7-11
Typical log of conductive bed obtained with an inverted three-electrode arrangement.

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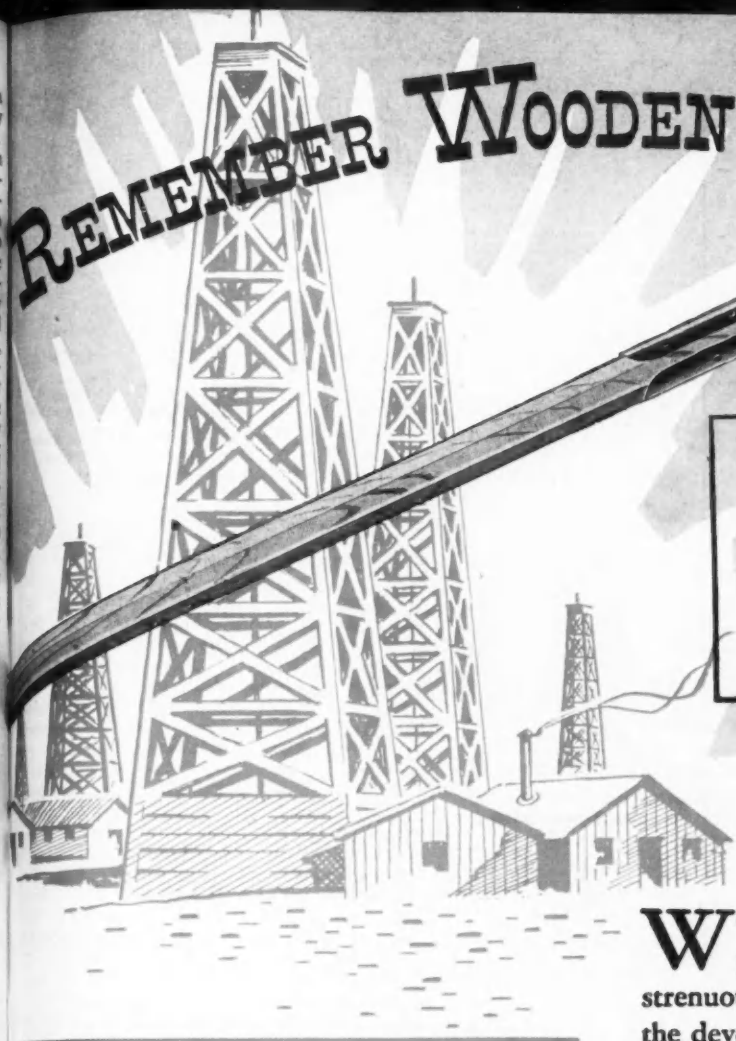

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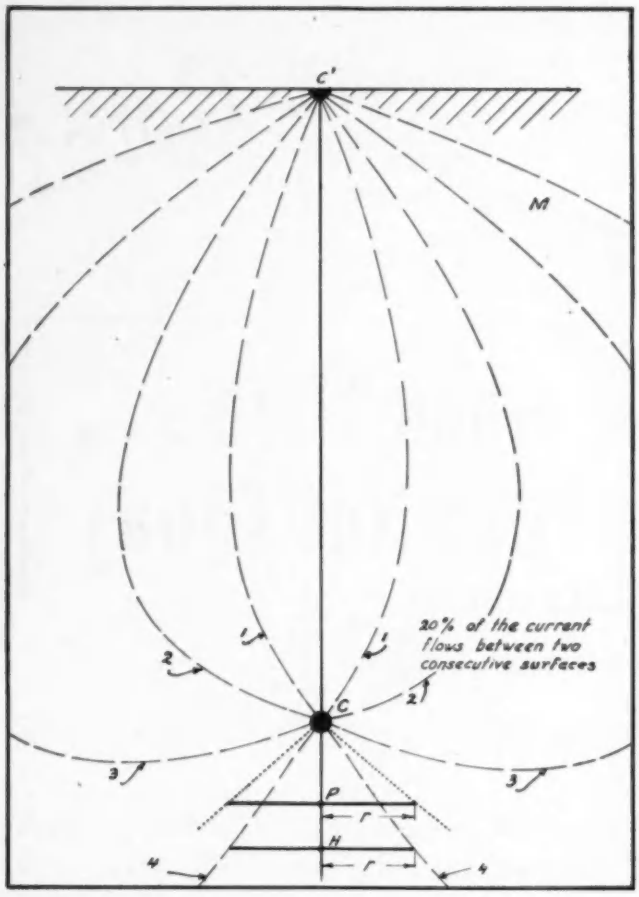

FIGURE 7-12
Schematic illustration of current penetration.

cussion does not apply, because of the importance of the skin effect). Sometimes this current cannot be detected because of its smallness, for instance, when the point of observation P′ is very far from the current electrodes—more than 1000 feet—and when conventional logging equipment is run in the bore hole. Nevertheless, a current does flow at P′ as long as the electrodes C and C′ are energized. This is illustrated by Figure 7-12, which represents the current distribution in a homogeneous and isotropic semi-infinite medium M. One fifth of the total current flows between two consecutive surfaces, the sections of which are shown by the dash line curves 1, 2, 3 and 4. This pattern would, of course, be the same in any vertical plane passing through the line CC′, and it should therefore be visualized in 3 dimensions.

If the bore hole coincides with the line of electrodes CC′, then it is easy to determine on the figure the horizontal circle H centered on line CC′ and through which as much as perhaps 20 percent of the total current will pass, the remaining 80 percent of the current flowing outside of the circle H. Let r be the radius of this circle. It is evident from an inspection of the figure that for any measuring point P comprised between C and H, more than 20 percent of the current—perhaps 27 percent in the case of the figure—will flow within the distance r from point P, and, of course, less than 80 percent will flow beyond this distance. The relative amount of current flowing into the formation remote from the bore hole is therefore less at point P than at point H. Consequently, the apparent resistivity measured at H will be controlled by the remote portions of the ground to a greater extent than the apparent resistivity measured at P.

If the medium M is not homogeneous, the pattern of Figure 7-12 is, of course, distorted, but the preceding discussion is nevertheless qualitatively valid; the percentage of current which is related to far away materials will be greater at points far from the current electrode C than at points situated closer to it. This is commonly expressed by saying that the penetration is greater for long electrode spacings than for shorter ones.

It can be seen from the preceding analysis that it is difficult, if not impossible, to assign any numerical value to the current penetration because with any electrode spacing part of the current always flows to infinity. It is possible, however, to speak of relative penetration, and say that a long spacing has a greater penetration than a shorter one.

To picture in a different manner the difficulty of finding any definite numerical value for the penetration when a given spacing is used, consider the case of a highly resistant bed B, for example a thick lime bed whose resistivity is 10,000 ohm-m, (not infrequent in Mid-Continent) traversed by a bore hole whose fluid has a resistivity of 1 ohm-m (see Figure 7-13). It is obvious that in this extreme case the current leaving electrodes C (assumed to be near the center of B) is concentrated almost exclusively in the bore hole W so that at a point P situated 2 feet below C, approximately 50 percent of the current (half of the current flows downward and half flows upward.) is flowing through a circle whose diameter is less than 1 foot (the bore hole). At a point P′ situated 10 feet below C, the same amount of current will flow in the bore hole. It is clear that

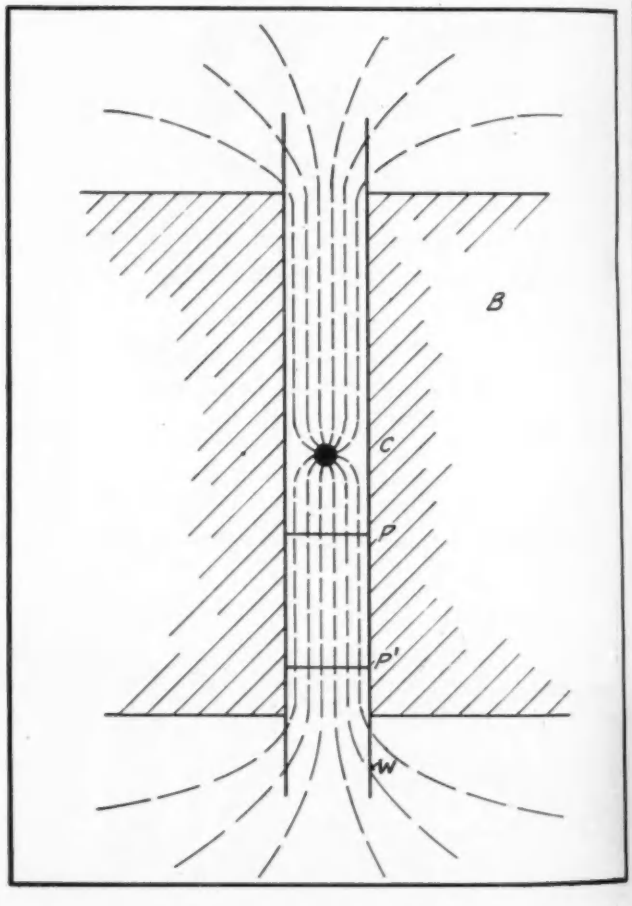

FIGURE 7-13
Lack of current penetration in a very resistant formation traversed by a bore hole containing drilling mud.

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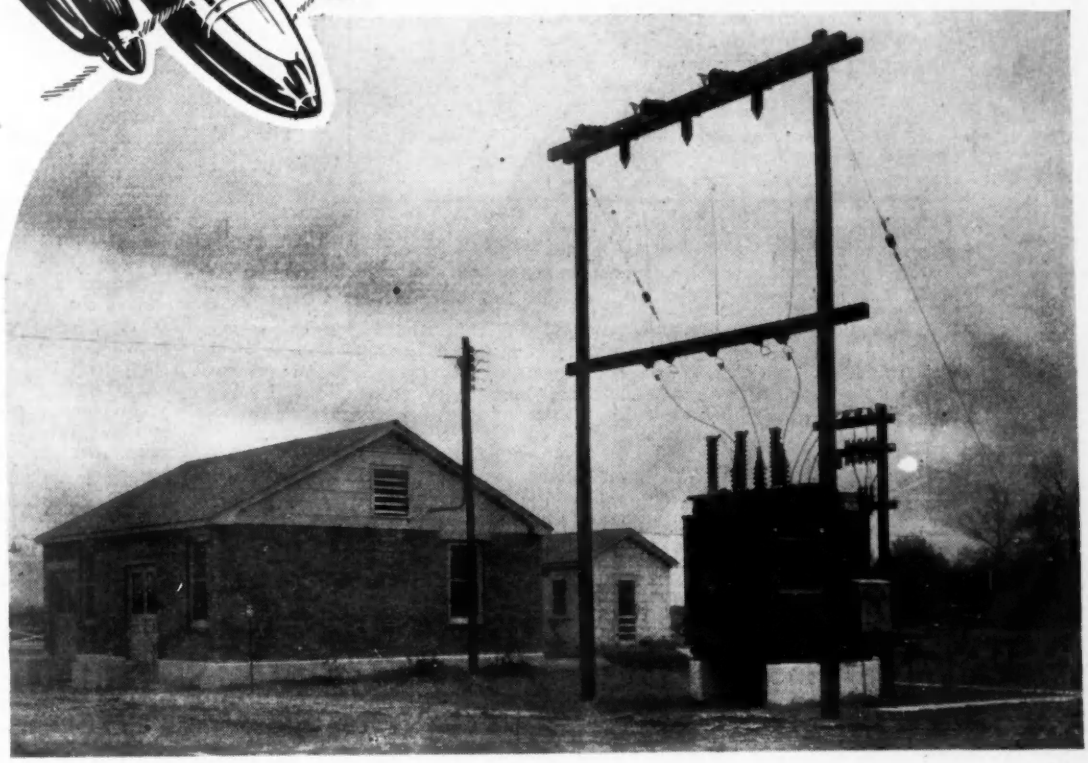

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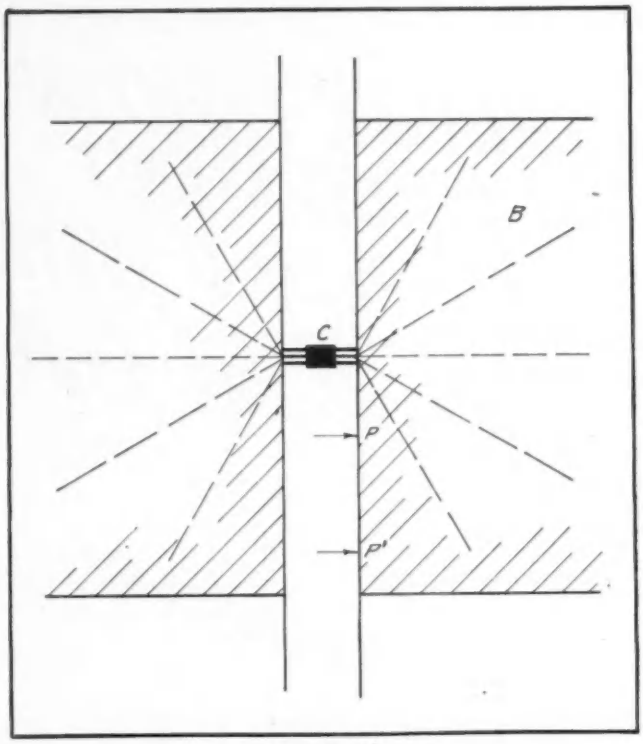


FIGURE 7-14

Nearly normal current penetration in a very resistant formation traversed by a bore hole which does not contain drilling mud.

under such conditions the relative penetration is nearly the same at all points of the bed regardless of the electrode spacing used. In this case, of course, we could exceptionally speak of current penetration and say that it is practically nil everywhere.

Now, the case of the same highly resistant bed B will be investigated again, but when the hole does not contain any conducting fluid (cable tool hole, for instance). Suppose that the hole is logged by using the so-called brush type electrode. In this case it is evident that the current leaving electrode C must flow through the lime, since the fluid (usually air) contained in the bore hole is considerably more resistant than the formation. This flow will therefore take place in the conventional manner, namely, the current will radiate equally in all directions, as shown on Figure 7-14. It is obvious that at point P' the penetration — as tentatively described previously — is approximately 5 times greater than at point P.

The preceding example shows that for a given bed logged with the same arrangement, the penetration can vary within considerable limits according to the environments.

If the bed B is less resistant than supposed in the foregoing example, having, for instance, a resistivity of 1000 ohm-m, while the bore hole is filled with mud having a resistance of 1 ohm-m, there will still be an abnormal concentration of current in the drilling fluid, but a measurable amount of current will, however, spread into bed B. Only when the resistivity of B nearly equals that of the mud will the current distribution, and therefore the penetration, be similar to that illustrated on Figure 7-12.

Experience has shown that, except when extremely resistant beds are being logged, an N foot spacing has such a penetration, that the influence of the materials situated beyond N feet from the bore hole is preponderant on the apparent resistivity value. This is commonly expressed by saying the penetration equals the spacing.

To summarize it can be said that in general

(1) The penetration is relatively large when the electrode spacing is large.

(2) The penetration is relatively small when the beds being logged are much more resistant than the drilling fluid.

The foregoing discussion is not restricted to the 3-electrode method. It applies to all conventional multiple-electrode logging systems. (For a good analysis of the penetration the reader is referred to "Current Penetration in Direct Current Prospecting," by M. Muskat and H. H. Evinger—Geophysics, October 1941. The results described in this article, however, are not directly applicable to well logging).

It has been seen that when the current electrode C of a three-electrode arrangement is traveling in a medium whose resistance is continually changing, the resulting log is much more distorted than when individual beds comprised between thick shale sections are logged. These additional distortions are caused mainly by the presence of thin streaks comprised between current electrode C and the potential measuring electrodes P_1P_2. Distortions in general have been qualitatively investigated in a previous article when Figure 5-9 was discussed. At this occasion, these distortions were taken advantage of in order to obtain simply a schematic log of a given sequence of formations, and it was shown that distortions occur when a current electrode is close to a boundary between two materials having different resistivities, regardless of whether an interesting bed is being logged at that time, or not.

When a given bed B whose boundaries are A and A' (see Figure 7-15) is concerned, it is convenient to consider the two following types of distortions:

1. The normal distortions, which are produced by the boundaries A and A'. These distortions are those which give the log its characteristic shape, and they have been discussed at length in this and in the preceding article.

2. The spurious distortions, which are introduced by other beds, like D,

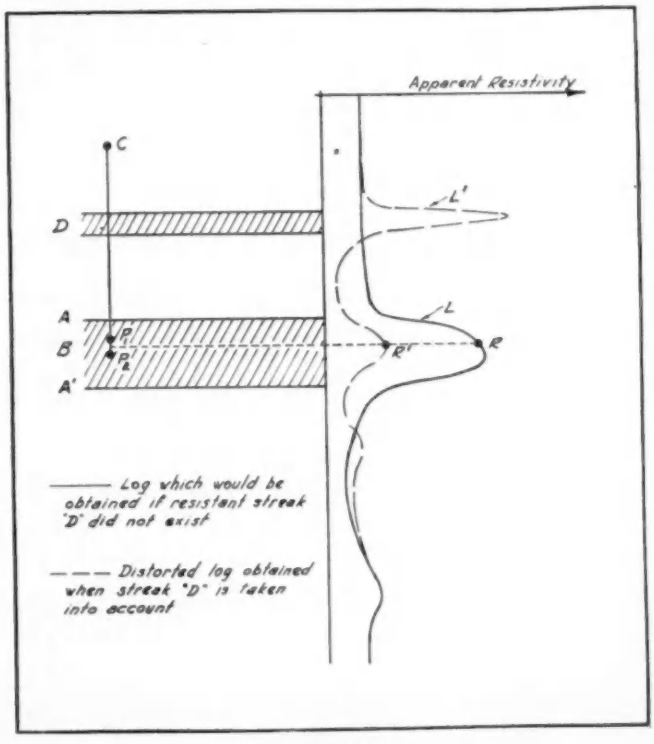
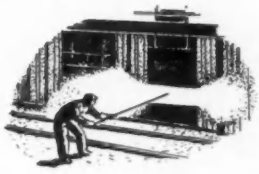
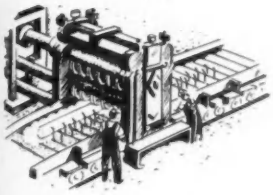
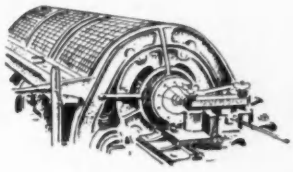
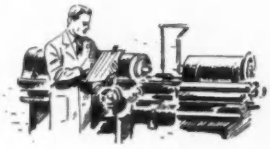


FIGURE 7-15

Distortion of three-electrode log caused by a hard streak.

At every stage...from the scrap *to the open hearths*  *and hot mills*  *and fabricating,*  *keen-eyed inspectors*  *check* ✓ *and double* ✓✓ *Roebling Wire Rope. That's why you can depend on...*

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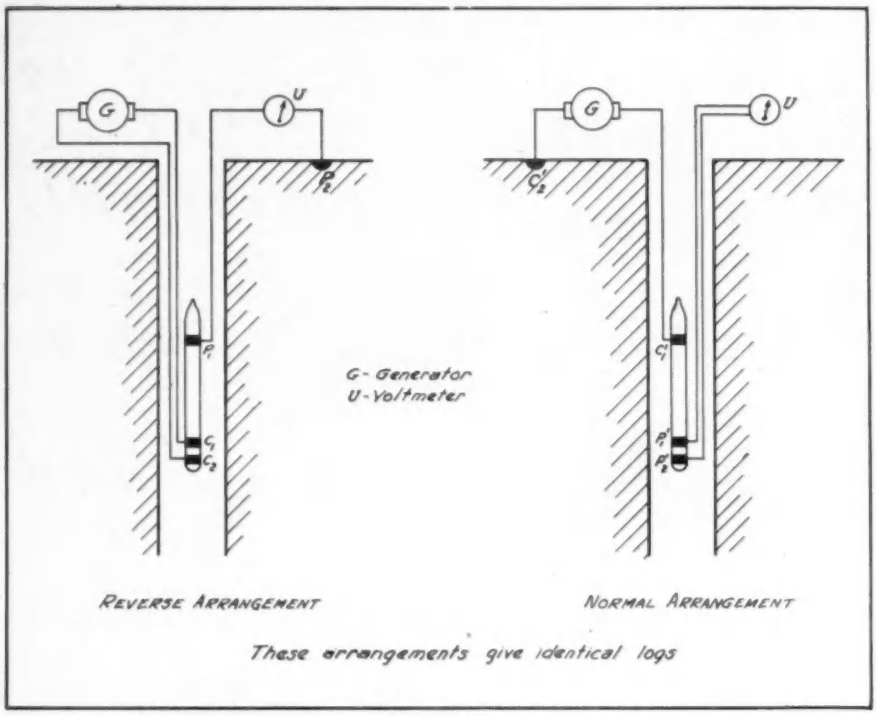


FIGURE 7-16

Application of the reciprocity principle to the two-electrode method.

either situated a few feet above C, or comprised between C and P_1P_2.

In the case of Figure 7-15, the influence of the resistant bed D is to decrease the amount of current reaching the region below D when electrode C is above D, and to increase it when C is below D. The apparent resistivity which would be normally R if bed D did not exist, is now R', smaller than R. The corresponding log L' differs appreciably from the normal log L, which renders a quantitative analysis of the specific resistance of bed B very difficult, if not impossible. If D is extremely resistant (hard streak, for instance), its screening influence can be such that the apparent resistivity of bed B is decreased 75 percent, or even more. An oil sand B can, under such circumstances, be easily mistaken for a water sand. This condition is not infrequent, as many sands are known to have a thin hard cap.

It is clear that the probability for having spurious distortions is great when the distance CP_1, that is, the electrode spacing, is large. In fact, the larger this distance, the more chances there are for foreign beds to be comprised between C and P_1. To have an average small number of spurious distortions, it is therefore necessary to use a small electrode spacing. On the other hand, in order to have enough penetration, it is imperative to use relatively long spacings. As these two conditions are obviously incompatible, it is necessary either to reach a compromise or make a sacrifice. Because a compromise is rarely satisfactory, it is perferable to enhance one particular good feature and sacrifice the other. This, logically, leads to the following procedure. Use a short spacing for fidelity, and use a long spacing for penetration. An electric log shall comprise, therefore, two resistance curves, one made with a short spacing, and one made with a long spacing. It will be seen later that two-electrode curves are not acceptable, in general, when they are made with a long spacing, whereas three-electrode curves are much more satisfactory. The consequence is, therefore, that a three-electrode arrangement with a long spacing must be used when logging the majority of the bore holes drilled for Petroleum. The resulting curve will, of course, be quite distorted in many instances, but, in general, this will not impair its usefulness when this limitation is known and taken into account when interpreting the whole electric log.

In practice, in order to have enough penetration, it is recommended to have a 3-electrode spacing of at least 10 feet, and preferably 18 feet in areas where the wells are deep and the sands very permeable (Gulf Coast, for example). Such a long spacing will be superfluous on many beds, but it is an advisable safety factor.

The Reciprocity Principle

The reciprocity principle explained in a preceding article can be applied to the 3-electrode method as follows: Referring to Figure 7-16, the arrangement to the left comprises two current electrodes C_1C_2 located in the bore hole. Above them is a potential electrode P_1. The second potential electrode P_2 is placed at the surface. The distance P_1C_1 is large compared to C_1C_2, for instance, P_1C_1 equals 17 feet and C_1C_2 equals 2 feet. On the right side of the figure is the arrangement used for obtaining the logs discussed in this article and in the preceding one. P_1' and P_2' are the potential measuring electrodes and are both situated in the bore hole. The current electrode C_1' is also in the hole and is placed above P_1'. The other current electrode C_2' is at the surface.

If $C_1C_2 = P_1'P_2'$ and if $P_1C_1 = C_1'P_1'$, the apparent resistivity logs given by the two arrangements are identical. The electrode configuration (reverse) shown at the left is therefore also called a "3-electrode arrangement" and it can be used instead of the configuration (normal) shown at right if desired.

All the discussions given previously regarding the 3-electrode method applies indifferently to anyone of these 2 electrode arrangements.

Summary of Three-Electrode Method

The fundamental properties of the 3-electrode method have been summarized on table 7-1 for the convenience of the reader. This table refers only to single beds placed between formations reasonably thick and homogeneous. A summary of interpretation for broken sections cannot be given because no simple rules are available. The data regarding the resistivity values apply only when long spacings are used, so the bore hole influence and the mud invasion can be disregarded. This is the usual case in practice. As short 3-electrode spacings are almost never used, the properties of such arrangements have not been discussed in the articles dealing with the 3-electrode method.

TABLE 7-1

Fundamental Properties of Three Electrode Logs

	RESISTANT BEDS*			CONDUCTIVE BEDS*
	Thick†	Critical Thickness†	Thin†	Thick or Thin†
Approximate value of true resistivity‡	Given by point of log situated in the center of the hump, when bed thickness is more than one and one-half the spacing.	Cannot be obtained by inspection. Can be computed when bed not too resistant.		Given by minimum value read on log. Good accuracy when bed thick.
Top contact	Not sharply defined with standard arrangement. Sharply defined with inverted arrangement.	Fairly well defined.	Well defined.	Sharply defined with standard arrangement. Not sharply defined with inverted arrangement.
Bottom contact	Sharply defined with standard arrangement. Not sharply defined with inverted arrangement.	Fairly well defined.	Well defined.	Not sharply defined with standard arrangement. Sharply defined with inverted arrangement.
Approximate bed thickness	Add spacing length to apparent thickness.	Equal to apparent thickness.		Subtract spacing length to apparent thickness.

* Data valid only for single beds placed in thick formation.
† Critical thickness equals length of electrode spacing. Thick beds denote beds thicker than critical thickness and thin beds denote beds thinner than critical thickness.
‡ Electrode spacing is assumed to be large enough so that mud invasion and bore hole influence can be disregarded.

Above left: **Opening pipe line trench through marsh land with a plow. Man at rear of marsh buggy is standing on a plow that will open a ditch 18 to 20 inches deep by 40 inches wide. Plow was pulled by the marsh buggy along surveyed pipeline right-of-way.** *Above right:* **Amphibious marsh buggy with pontoon type wheels plies canal under the power of its own gasoline engine. The buggy handled much material that otherwise would have been moved by hand.**

Laying Pipe Lines in Marshes

New method used in South Louisiana pushes welded sections of pipe into ditch plowed through marsh and canal bottoms

By TOM L. TURNER, Staff Writer

PUSHING welded line sections into a pipe-line ditch plowed through floating marsh and canal bottoms is a new method used in South Louisiana by Sharman and Allen, pipe-line construction contractors.

Developed for just such jobs, the novel equipment includes self-propelled marsh buggies, capable of traversing land, marsh or water, spud barges that can be anchored in canals or rivers, and plows that will turn a ditch 18 inches deep and 40 inches wide.

Utilizing the new method to the fullest, and resorting only occasionally to the conventional manner of lowering the pipe, Sharman and Allen pushed 13,000 feet of 6-inch, 17-pound welded line pipe from one set-up.

A gigantic plow, similar to the common mold board plow and pulled by a winch line attached to the rear of a marsh buggy, was designed to open the trench. This sufficed except when the marsh grass did not afford enough traction, in which case it was necessary to attach another buggy to the one pulling the plow in order to form a dead man.

The manpower thus employed never amounted to more than the two men on the buggy, two on the plow and two following to clear the trench of debris, regardless of such obstacles as strong winds blowing the marsh buggies, loose grass causing loss of traction, and changes from floating marsh to water. However, much additional equipment was needed to get the pipe, paint pots and welding machinery onto location.

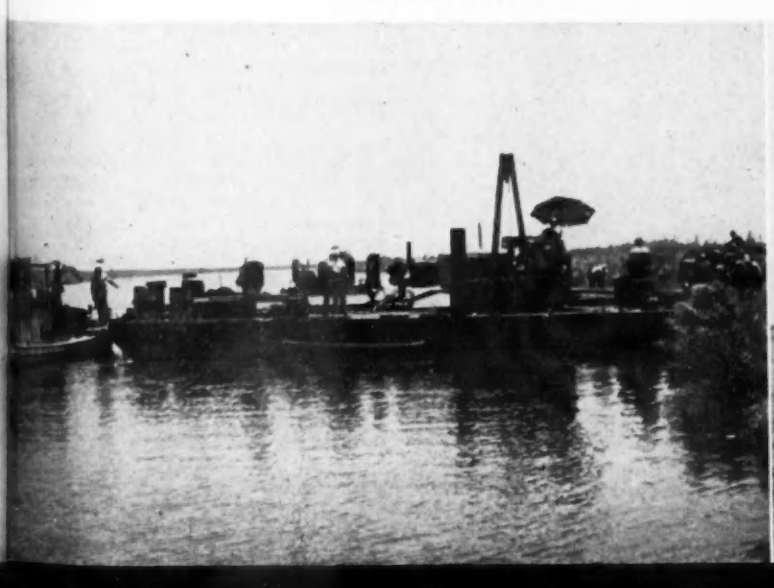
Front Wheels Powered

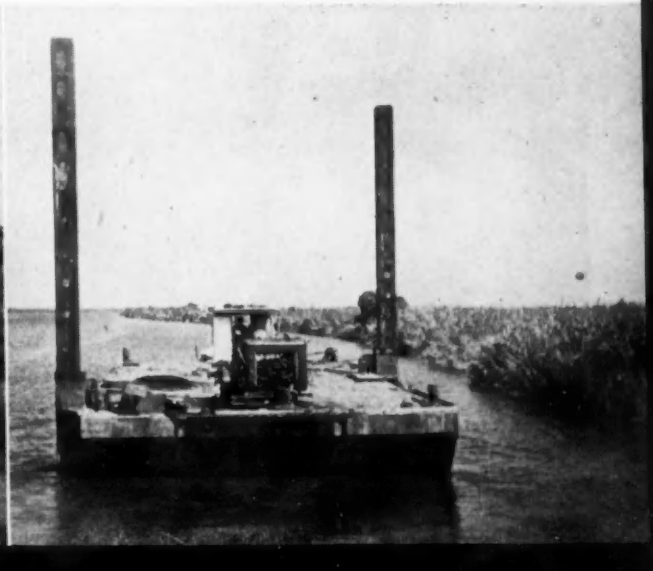
In constructing the several buggies used on the job, Sharman and Allen followed the pattern long used by geophysical parties for exploration work in swamps. Pontoon type wheels placed on front and rear are turned by a gasoline motor driving the front wheels by a chain. Steering is done with the rear wheels. Additional utility is obtained with a heavy-duty winch on the rear of the buggy, thus facilitating moving of heavy equipment and enabling the buggy to be attached to the upper end of the pipe when it is being pushed.

To expedite the moving of equipment to location, the contractors built a 'spud barge,' so called because it is constructed with spuds attached to either side of the barge. The spuds are 14 by

Lower left: **Spud barge loaded with equipment anchored by the dropped spuds, at the point of line corssing the river. Steady unloading dock was formed by the spud barge, allowing material to be unloaded by use of a ramp.**

Lower right: **Spud barge with spuds raised after material had been unloaded. Spuds constructed of heavy timbers encased in steel were raised or lowered by the double drum hoist permanently attached to the barge.**





Above left: **Welding machines were on portable skids for easy handling. All portable equipment was on heavy steel skid forms to be handled by tractors and marsh buggies.**

Above right: **Tractor unloaded pipe from barge as needed. Pipe was handled only one time from barge to ditch where it was welded.**

14-inch timbers encased in steel and held in a heavy steel housing welded to the sides of the barge. The spuds are raised and lowered by power furnished from a double drum winch on the barge floor, and when the barge is to be anchored the spuds are dropped by releasing the clutches on the hoist, to which is attached cables running through snatch blocks and down the side of the spud frames to the bottoms of the spuds. The hoist on the barge also handled much of the heavy equipment needed to lay the line.

All equipment was on heavy skids to aid in portability. To prevent damage, the welding machines, paint pots, tool boxes, etc., were attached to heavy steel pipe skids.

After opening the trench and placing the equipment, the next step in preparing the pipe line was to select a site and build a board road, the length of which was determined by the number of welders being used. Since two welders could handle only two joints, the road was built the length of two joints of pipe after allowing for working space. The tractor for the spud barge was then unloaded down a ramp onto the board road, after which the tractor handled the remaining equipment with winch lines attached to the side arm boom.

Pipe Handled Once

After placing the welding machines, paint pots, etc., the spud barge was moved and the pipe barge set in place so the tractor could remove the pipe as needed. The pipe was handled only once by the tractor before being put in place for the welders.

The first two joints of pipe were of 11-pound weight so they would float and the remainder of regular weight. After the joints were welded a rope

Upper left: **Tractor held pipe in place while welder tacked joints together. In this picture only two joints are being handled at one time as only two welders were on the job.**

Lower left: **Pipe was not laid in the trench in the conventional manner but was pushed into the open trench by tractor. Here tractor had attached cable to the open end of the line from the tractor side boom and prepared to push two joints of pipe into the trench. From12-13,000 feet of pipe was handled in this manner at one push.**

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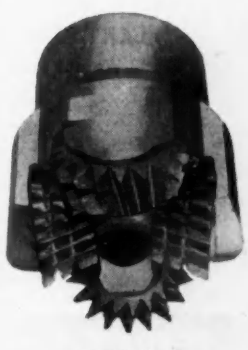

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Tractor is now at the end of the board road, having pushed the two joints of pipe that had been welded to the main sections into the open trench through a Louisiana marsh.

was attached to the first joint and a worker stationed there to prevent the pipe from going into the bank of the ditch while it was being pushed. The tractor next attached a winch line from the side arm boom to the end of the pipe and pushed the two joints into the trench. This procedure was followed until 13,000 feet of pipe had been pushed into the trench in one continuous push from the same set-up. The amount pushed from each set-up varied, of course, with conditions.

The pipe used on the job was reclaimed and reconditioned 6-inch, 17-pound plain end line pipe, double coated and double wrapped with a felt base wrapper. No lathes were used around the pipe as it was laid. No trouble was encountered with scuffing or tearing of the wrapping as it was pushed into the trench.

Closer Pattern Sought For Howard-Glasscock

Continental Oil Company has requested a standard 10-acre spacing for wells drilled to a total depth of 1500 feet or less in the Howard-Glasscock Field, Howard and Glasscock Counties.

Wells in the area are being drilled to the Yates sand. Under earlier drilling to this horizon, wells were drilled on ten-acre blocks; however, during the past two years, wide spacing under statewide rules was provided, and there was no special rule for the field that would permit wells to be drilled on the closer pattern.

New District Office

Establishment of district production offices in Vicksburg, Mississippi, has been announced by The Carter Oil Company.

The new Vicksburg district is the result of the company's consolidation of district offices at Pickens, Mississippi, and Jena, Louisiana. It forms a part of company's southern division, headquarters of which are located in Shreveport, Louisiana.

Kansas Allowable

The Kansas State Corporation Commission fixed the state's oil allowable production for September at 275,000 barrels, unchanged from August. Purchasers nominated 340,105 barrels for September needs compared with 349,943 barrels for August.

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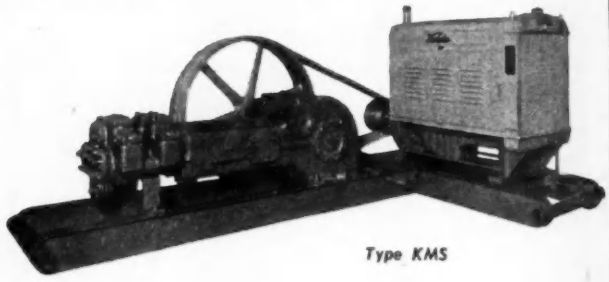

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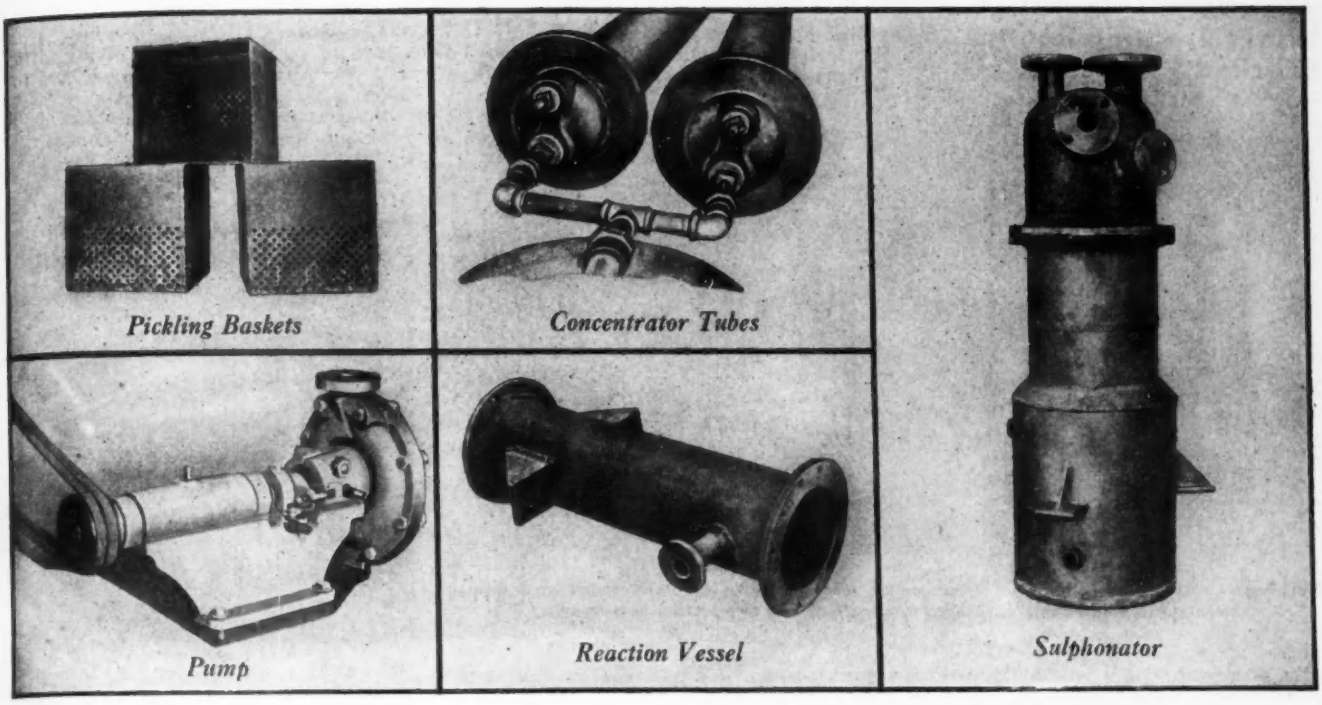

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The booklet, "HASTELLOY Corrosion Resistant Alloys" contains more information on these alloys. Write for it. If you wish, we will send our price list as well. Address your request to any Haynes Stellite Company office.

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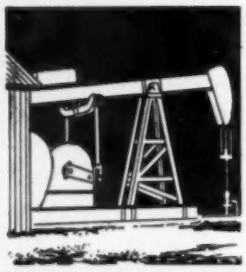


OPERATING HINTS *For Production Men*

Water Treating Routine Checked by Record

Blackboard, posted on treating line, lists time of next change in water treatment, and insures attention to notice through visibility from all portions of structure housing unit.

PROCESS WATER

In large pump stations and gasoline plants, it is necessary to maintain the correct hardness of the water used in the plant. To save the steps of the operator, one company installed titration apparatus on the piping in front of the water filters. This particular water is too soft and it is necessary to add a batch of calcium chloride brine at intervals. When brine is added, a note is made on the blackboard.

Thereafter, at regular intervals a sample is collected in a measuring flask and is checked with soap solution. When the hardness decreases to a certain point, more brine is added.

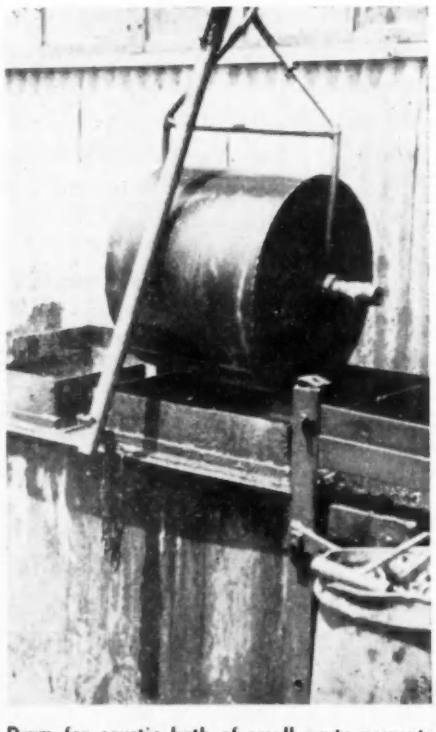
Parts Cleaning Drum Saves Frequent Handling

EQUIPMENT CLEANING

Removing hardened accumulated oil and rust from small parts causes considerable hand work around the oil field maintenance shop. A very efficient small parts washer was made by using an old oil drum and a small open top tank. The oil drum was of the 15-gallon size and was cut down to about 16 inches in length. The flat ends were perforated and an axle made from a sucker rod was welded in the center of the drum. A simple door was cut out to allow access to the inside of the drum. The sucker rod shaft is extended about two feet on one end and has a pulley fixed to this end. The shaft and the drum were turned by a ¼-H.P. electric motor whose speed was slowed down to 50 R.P.M. by suitable pulleys and V-belts running outside the tank.

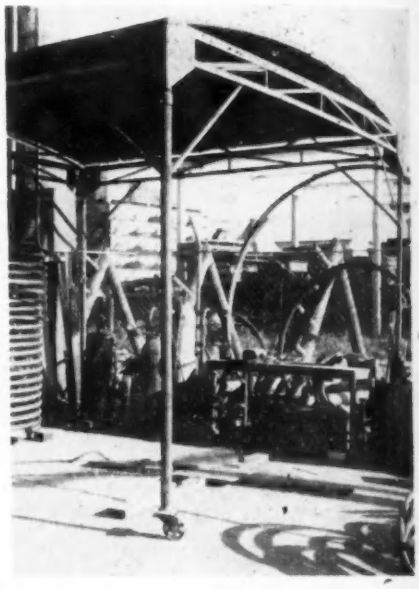
The stationary tank is made of sheet steel. A caustic solution is placed in this tank. A gas burner below the tank can be used if it is desired to keep the caustic hot. Half bearings were adequate to hold the revolving drum and permitted easy removal of the drum.

Small parts such as nuts and bolts were quickly cleaned to an almost new appearance with this simple device.



Drum for caustic bath of small parts prevents loss and insures thorough removal of oil and rust.

Portable Welders' Roof Prevents Weather Damage



Light truss carries canvas shelter, while casters on posts perm.t quick transfer to next job.

MAINTENANCE WELDING

Around the station or oil-field warehouse and repair shop, a certain amount of the welding for maintenance must be done in the open, both on account of the size and shape of the work being welded, and because of the need for eliminating fire hazard within the station building. Welders working outdoors need protection from direct sunlight if they are to do their best work, and both they and the work must be shielded from rain if best welds are to be run up.

A light, inexpensive and easily moved shelter for protection of outdoor work is made with a framework of used 2-inch pipe for standards, light tank angles for truss members, and a curved roof structure over which is stretched heavy canvas, laced or stitched to the edge members of the supporting frame.

The legs are 8-feet high, set 10 feet apart, which affords ample headroom and will permit two welders to work side by side on separate jobs without

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interference. Heavy swivel-mounted casters are set under each leg to permit the shelter to be wheeled in place over heavy work after it is laid out, removing the need for dragging in and relocating pipe or intricate manifold set-ups after being once blocked up to fit.

Elevated Tool Box Protects Servicing Units

Steel tool box, with pipe extension legs, carries servicing tools well above contamination.

Tools which are most frequently used for adjustment or servicing of the gathering line pumps are carried in a special box to prevent loss of units in sand or loose soil, and to enable selection of the proper tool to be quickly made.

HAND TOOL SAFEGUARDING

This unit is made from light tank steel, welded to form a tight box of size ample to accommodate the longest wrench handle, and is provided with three short legs of salvaged pipe. The two legs of small pipe are sealed at their lower ends to prevent sinking into soft soil, while the third leg, in the instance photographed a damaged swage, is large enough so the unit may be slipped over a stake or pipe stub and thus serve to hold the box in the clear when working in wet or muddy surroundings.

The three legs insure a steady stand on any kind of surface, being automatically equalizing; and by raising the box above the level of the surrounding terrain, aid in keeping the tools clean of mud and grit.

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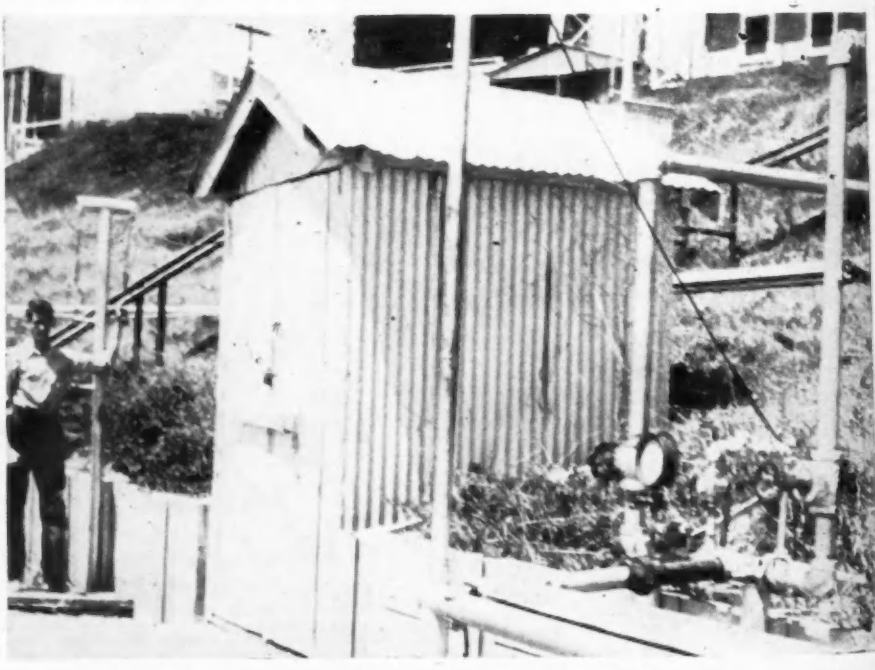
Remote Valve Control Protects Operators

One company in California was confronted with the job of loading many large gasoline tank trucks each day. These trucks carried the highly volatile natural gasoline from field to refinery.

LOADING SAFETY

To protect the operator of the loading rack from the dangers of fire or explosion, control of the valves at a safe distance from the truck being loaded was found to be necessary.

The problem was solved in a safe and inexpensive way by using a small steel cable as a remote control. The shut-off valve was of the quarter turn plug type. Onto the end of the valve handle a ¼-inch steel cable was fastened and this cable was run over pulley supports to a safe distance of approximately 30 feet. At the operator's end of the cable a suitable handle was fastened. The supports holding the cable were placed in a position which enables the operator to have complete visibility of the entire operation.



By extending line from lever arm of plug valve through conduit to distant post, the operator can control flow of volatile fluids without entering possible gas zone.

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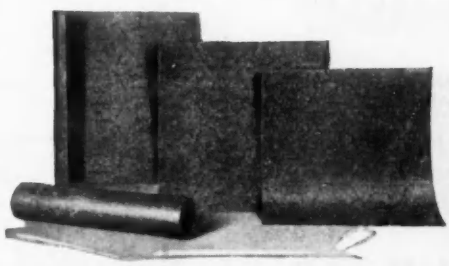

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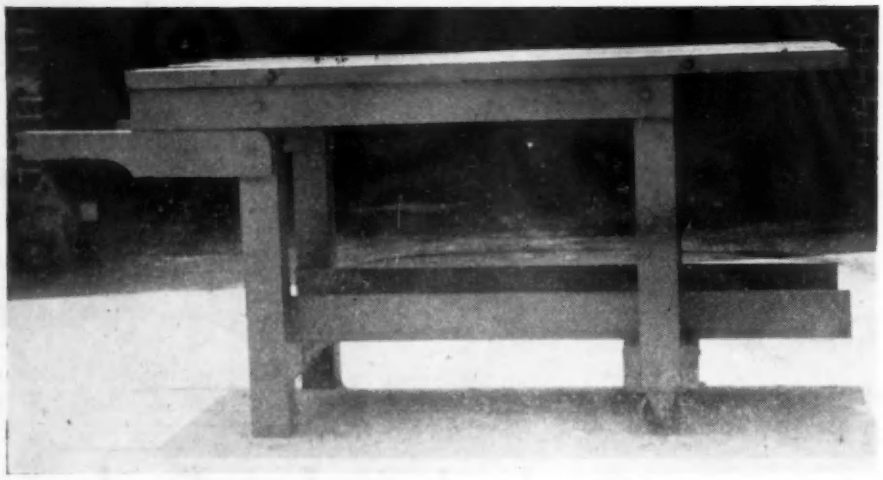
OPERATING HINTS *For Pipeliners*

Portable Workbench Speeds Maintenance



Bolted oak frame, caster mounted at one end for ready portability, supports bench with projecting end for clamped work, while folding handles assist in making quick shifts.

EQUIPMENT MAINTENANCE

A heavy-duty, portable workbench, requiring a minimum of steel, has been built for taking to the job on much of the station maintenance work. The frame is made from 4x4-inch oak timbers, mortised and bolted to form a rigid structure above which is a working surface of 2-inch planking, bolted through transversely and lag-screwed to the upper members of the frame.

To provide space for clamping work, one end of the bench is extended beyond the framework, the 2-inch planking overhanging and protecting the shelf resting on the lower transverse members of the frame.

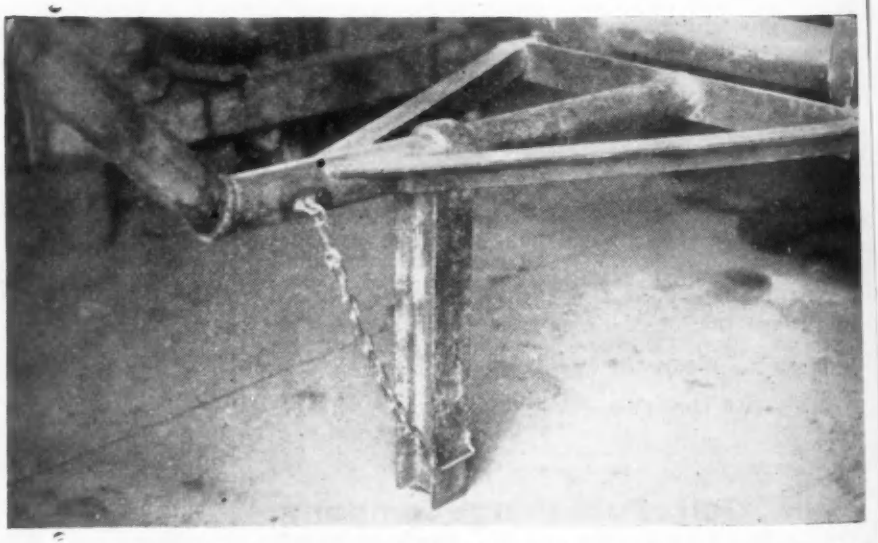
One pair of legs is equipped with small, heavy duty casters, set parallel to the length of the bench. A pair of 2x4-inch oak handles, each attached to the frame with a single bolt, are so arranged that they may swing up against the top frame extension, and thus permit the end of the bench to be lifted for rolling on the casters. When not required and to give better clearance, the handles may be folded or swung down along the uprights to which they are bolted.

Sturdy Trailer Leg Protects Equipment

PORTABLE WELDING UNIT

Materially reducing time lost in shifting the two-wheeled, trailer-mounted electric welding unit along the line of work on a pipe-laying job, the foreman of one welding crew devised an easily manipulated folding trailer leg, incorporating in it sufficient strength to make it as sturdy as the trailer chassis itself. An inverted U-shaped collar was welded over the desired point on the pipe trailer tongue, the two ends extending about an inch below the lower side of the bar. The leg, a 2-foot length of 3-inch I-beam, was then prepared, a hole being drilled through one corner of the upper end. A bolt run through these and similar matching holes in the collar ends provides a sturdy hinge, the offset hinging point permitting the leg to fold back up through a full 90 degrees where it may be tied to the bottom of the tongue.

When lowered to the upright position, the offset hinge feature allows the leg to come no further than the vertical, and in that position firmly supports the shaft. A light chain with a snap latch on one end extends upward to a welded loop, secures the leg in the vertical position, and when brought up to the horizontal, the same chain is wrapped around the shaft and leg, then latched to itself again, thus positively locking the leg in the travelling position. The ruggedness and simplicity of the trailer support plus the ease of handling has reduced lost time involved in moving the unit from one set-up to another.



Hinged to lower side of trailer tongue, this leg drops to give firm support, nesting snugly against pipe member when lifted, and chaining into place with attached link unit.

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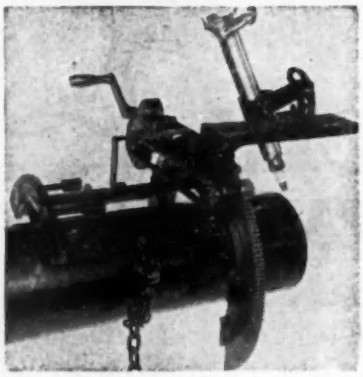

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HAND TOOL ACCESSORY

More efficient use of an ordinary machinist's vise can be obtained by placing the vise on a stand of used pipe with a plate attached to hold small objects, tools, etc. A flange of scrap steel is cut to fit the bottom plate of the vise then welded to a section of used pipe which has been mounted or flanged to the floor in a steady manner. The vise is then attached in the usual manner to the flange.

By welding a curved plate on one side of the pipe stand additional use may be made of the vise, as small tools can be laid there for convenience or it can be used as a back-up support for small work. A vise placed on such a stand gives full 360° service without moving the material being worked on.

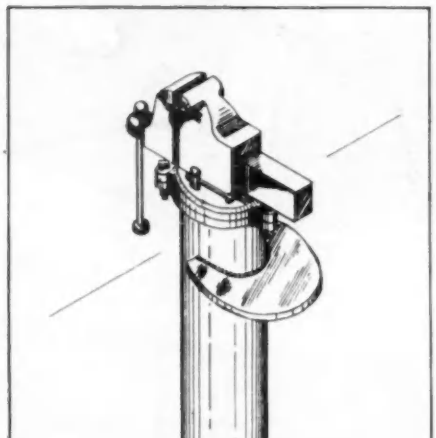

Plate on heavy pipe support carries full-circle swing of vise, while rest holds work.

Refinishing Points Extends Magneto Life

IGNITION SERVICING

Contact points in magnetos, especially those which are carried on the ends of adjusting screws, can be most effectively and economically resurfaced after being pitted if they are rotated instead of reciprocated while being ground to shape.

One station obtains the desired contour of the contact material by mounting a small electric drill in the work vise, chucking the screw on which the contact is carried to obtain true rotation. The refinishing is then done by holding an oilstone of the proper fine grit against the end of the revolving contact unit, rocking the stone slightly as the grinding continues to remove the wire edge which otherwise might be formed around the contact.

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Screw-mounted ignition points may be revolved by small drill unit while abrasive cuts pits.

Points refinished in this manner are shown by service records to stand up longer than those faced by the alternate plan of holding the screw in the vise and rubbing the contacting material smooth with an oilstone after filing flat. The drill-grinding method insures that the refinished surface is perpendicular to the axis of the supporting screw, and thus assures maximum contacting area, while attaining this condition by means of the filing operation is accidental only, as a slight misalignment of the screw in the vise can throw the the completed point far enough out of alignment for arcing, and consequent pitting, to start soon after the point is put into service.

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PIPE LINES

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Pipe Line Review

1100-Mile Pipe Line from Montana to Seattle Planned

Work will begin next year on a 10-inch, 1100-mile pipe line from Central Montana to Seattle, according to C. O. Risen, Billings, Montana, vice president of the North Pacific Pipe Line Company.

In addition to the $15,000,000 line, the venture will involve construction of a $5,000,000 refinery south of Seattle and a 960,000-barrel storage farm at Renton, Washington, Risen announced.

East Texas Supplies Most Of Emergency Line's Load

The East Texas field has supplied the 24-inch carrier of the War Emergency Pipelines, Inc. with 76,752,205 barrels, or 54.32 percent of the 141,312,067 barrels of crude received at the Longview terminal to August 1.

The Permian Basin contributed 41,816,710 barrels, or 29.59 percent of the aggregate, while relays of Southwest Texas sweet crude by pipe lines and barges comprised 19,477,939 barrels, or 13.78 percent, leaving the Texas Gulf Coast as a nominal contributor. Stocks on hand at Longview August 1 totalled 804,090 barrels, while the Big-Inch contains 1,469,160 barrels. The September schedule calls for 127,000 barrels of Permian Basin and 126,200 barrels of East Texas crude daily, involving a 6000-barrel gain and 6400-barrel decline, respectively, while receipts from Southwest Texas will average 66,800 barrels daily.

Back-Pressure Method of Computing Flows Explained

The United States Bureau of Mines, Department of the Interior, Washington 25, has published a report of the problem of determining the absolute open flows of large gas wells by the back-pressure method. Written by M. S. Schellhardt, natural gas engineer for the Bureau, at Bartlesville, Oklahoma, the text includes a discussion of limitations imposed on the range of back-pressure data obtainable at many large gas wells by the relationship between their delivery capacities and that of equipment such as heaters, meters and separators installed to handle gas deliveries produced by routine recovery operations.

FPC to Make Survey for Natural Gas Utilization

A survey designed to prevent waste or depletion of natural gas and for the purpose of recommending legislation in connection with the utilization of natural gas will be undertaken by the Federal Power Commission in accordance with provisions of a joint Congressional resolution, according to an announcement by Charles L. Orr, executive secretary of the Independent Natural Gas Association of America at Oklahoma City.

The investigation will determine the extent, location and availability of the natural gas reserves in the United States and the effects of present and anticipated depletion; the nature, amount and location of the present and anticipated utilization of natural gas, the resultant economic waste and undesirable competition with and displacement of other fuels, and the feasibility of converting natural gas and its constituent hydrocarbons for chemical and other superior uses, and to investigate all other matters relating to the production, transportation, distribution, sale and utilization of natural gas.

Permission to Construct Tennessee Line Sought

An application has been filed with FPC by the Tennessee Natural Gas Lines, Inc., Chattanooga, Tennessee, for authority to construct a 17-mile 10¾-inch pipe line from Ashland City to Nashville to make natural gas available to the latter city, at an estimated cost of $385,977.

☆

R. L. CLIFTON has been named manager of The Carter Oil Company; M. A. Wright, former chief engineer, has been named assistant production manager and is succeeded by Carl G. Herrington, and Ralph E. Damp, confirmed as general production superintendent.

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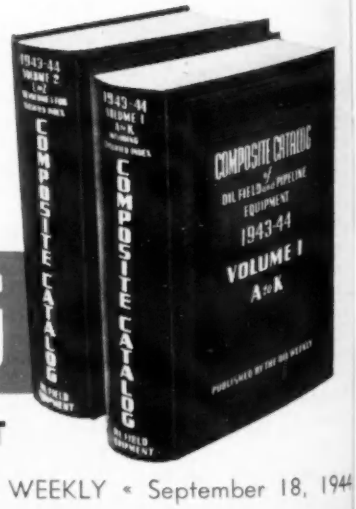

The COMPOSITE CATALOG

OF OIL FIELD AND PIPE LINE EQUIPMENT

Operations Again at High Levels, With Favorable Effect on Stocks of Crude

Operations of the industry were again at exceptionally high levels in the week ended September 9, with favorable effect on stocks of crude and products.

Crude production set a new all-time record of 4,689,000 barrels daily, under the increased allowables of September, and was 32,000 barrels a day higher than in the previous week. It was 335,000 a day or 7.7 percent higher than in the corresponding week last year.

Crude runs to stills were off 8000 barrels from the week before in averaging 4,584,000 barrels daily, but exceeded runs in the like week last year by 359,000 daily or 8.5 percent. Crude oil went to storage in the week ended September 2 by 551,000 barrels, having recovered from the 22½-year low of the beginning of that week to a total of 223,482,000 barrels at the end of the week. The latter quantity was, however, 11,153,000 barrels or 4.7 percent less than the 234,635,000 barrels held on September 4 last year.

Production of gasoline was reduced to 14,093,000 barrels for the 7 days ended September 9 from 14,265,000 the week before, but was 11.7 percent higher than in the like week a year ago. Stocks of finished and unfinished gasoline were lowered 345,000 barrels to 79,576,000, but the latter amount was 8,558,000 barrels or 12 percent more than the 71,018,000 held a year earlier.

Gas oil and distillate fuel oil production was cut back to 4,440,000 barrels for the week from 4,664,000 the week before, but was 9.7 percent higher than a year before. That product went to storage in the comparatively large amount of 1,089,000 barrels, stocks having risen to 43,053,000 barrels, an amount 5,002,000 barrels or 13.1 percent greater than that held a year previously.

Residual fuel oil production of 8,999,000 barrels during the week was 706,000 barrels higher than output the week before and exceeded that in the like week last year by 590,000 barrels or 7 percent. Stocks of residual were increased 859,000 barrels to 60,735,000 but were then 6,008,000 barrels or 9 percent under the level of 66,743,000 barrels reported a year previously.

Koch Projects Plant to Make Gasoline from Gas

Fred C. Koch, consulting engineer of Wichita, Kansas, announced plans for construction of a plant which will make gasoline from natural gas from the Hugoton pool. He listed associates in the project as P. C. Keith of New York, O. H. Ingram of St. Paul, Minnesota, and E. G. Bradley of Wichita. Champlin Refining Company of Enid, Oklahoma, may also be included in the project.

Koch announced purchase of 100,000 acres of Hugoton leases but said the plant site had not been decided upon. The plant will operate under the Fischer-Tropsch process, he said. Much of Germany's current gasoline supply is manufactured under that process which includes the conversion of coal into water gas and then into gasoline.

Associate Chief of OPA Fuel Division Named

Orville D. Judd, price executive of the petroleum price branch of the OPA since April, 1943, has become associate director of the fuel price division. Pending the appointment of a successor, however, he will also continue as price executive.

Judd was formerly employed in the Texas and Oklahoma fields, where he was a production supervisor. Later, he headed his own drilling and refining company, and from 1925 to 1943, when he joined the OPA's Cleveland office, was associated with the CIT Corporation of New York as vice president in charge of sales for the New England States.

Texas Well Permits

Permits for drilling 180 new oil wells in Texas were granted by the Texas Railroad Commission. The list included 52 wells in West Texas, 40 in North Texas, and 38 in Southwest Texas.

There were 17 from the Panhandle, 14 from the Gulf Coast, 13 from West Central Texas, and 6 from East Central Texas.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gasoil and Distillate Stocks Barrels	Gasoil and Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1941	4,337	11–22	4,120	10–18	266,187	3–29	99,727	3–29	[1]54,983	11–15	102,448	1– 4
1942	4,337	2– 7	3,961	1– 3	263,208	3–28	[1]109,281	3–14	49,861	11–14	95,857	1– 3
1943	4,436	11–13	4,331	12– 4	245,752	5–29	94,159	3–20	46,187	11–27	72,881	1– 2
1944	[1]4,689	9– 9	[1]4,752	6–17	240,992	1– 1	89,162	4– 1	43,053	9– 9	60,735	9– 9
Lows:												
1939	[3]1,601	8–26	3,125	2–18	[2]229,127	10–12	71,152	10– 7	20,722	4–15	105,397	4– 8
1941	3,364	1–11	3,490	1–18	240,399	11–15	79,923	10– 4	28,382	4–12	90,914	7–12
1942	3,297	7– 4	3,393	5–23	231,896	12–12	75,934	12– 5	29,240	4–25	72,962	12–26
1943	3,821	1– 9	3,579	3–13	232,191	1– 9	68,182	10–16	30,732	4– 3	57,596	12–25
1944	4,357	1– 1	4,228	2–12	[4]222,931	8–26	76,302	1– 1	30,232	4–29	49,737	3–18

TRENDS OF 1943 AND 1944

Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gasoil and Distillate Production Weekly	Gasoil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,880	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	3,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 25	3,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,659
October 30	4,383	4,176	237,219	12,813	69,297	4,642	44,591	7,968	63,833
November 27	4,414	4,261	239,761	12,638	69,980	4,379	46,187	8,633	62,143
December 25	4,363	4,185	241,310	12,597	74,024	4,457	43,791	8,689	57,596
1944:									
January 1	4,357	4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,330
January 29	4,409	4,359	240,251	13,427	81,085	4,054	37,266	8,889	52,857
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 25	4,385	4,443	236,285	13,362	87,287	4,979	31,319	9,013	51,669
April 1	4,383	4,435	234,667	13,824	89,162	4,450	30,530	8,367	51,326
April 29	4,431	4,300	235,342	13,126	88,462	4,284	30,236	8,398	49,985
May 27	4,514	4,532	234,423	13,502	86,468	4,702	32,035	8,568	49,812
July 1	4,587	4,638	228,860	14,052	83,359	4,496	35,360	8,872	52,235
July 29	4,608	4,627	225,112	14,115	82,665	4,833	38,135	8,900	56,280
August 26	4,667	4,698	[4]222,931	14,112	80,740	4,566	41,543	8,680	59,339
Sept. 2	4,657	4,592	223,482	14,265	79,921	4,664	41,964	8,293	59,876
Sept. 9, 1944	[1]4,689	4,584	.....	14,093	79,576	4,440	43,053	8,999	60,735
Sept. 11, 1943	4,354	4,225	234,635	12,619	71,018	4,049	38,051	8,409	66,743
Change:									
In week	+32	—8	+551	—172	—345	—224	+1,089	+706	+859
In year	+335	+359	—11,153	+1,474	+8,558	+391	+5,002	+590	—6,008
In year	+7.7%	+8.5%	—4.7%	+11.7%	+12.0%	+9.7%	+13.1%	+7.0%	—9.0%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944 [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Lowest since January, 1922. [5] Stocks, September 4, 1943.

International Developments

Cal-Tex Is Rigging Up For Egyptian Wildcat

South Mediterranean Oilfields (Standard Oil Company of California-The Texas Company) is rigging up for a wildcat test a few miles west of Cairo, Egypt. The location is 150 miles from nearest production at Abu Durba and Ras Ghareb, which lie on both sides of the Gulf of Suez.

The geology of the coastal area east and west of the Nile delta is regarded as most promising, with a great thickness of Mesozoic and Carboniferous strata and pronounced structures and structural trends. The whole area is rather completely leased up or licensed. Other companies holding exploration and development rights in the untested area include: Standard Oil Company of Egypt, Anglo-Egyptian Oilfields, Ltd. (Shell), D'Arcy Exploration Company, Ltd. (Anglo-Iranian), Socony Vacuum Oil Company, and Zaki Bey Wissa (Egyptian Oil Syndicate).

In the Gulf of Suez area, Standard Oil Company of Egypt is planning another test near the center of the Jebel El Tih area, between Suez and the Palestine border. This company has drilled 5 dry holes since 1939 on the west side of the Gulf of Suez in attempts to extend the Ras Ghareb field. Three of these were drilled during 1944.

Atlantic Refining Said Interested in Venezuela

Atlantic Refining Company is reported to have exercised an option to take over the unsurrendered Pantepec rights in the Pirital tract, western Monagas, Venezuela, for wildcatting and development. The deal is said to involve the payment of 4 million dollars for a half-interest in the property. While no producing acreage is involved, the tract is adjacent to the Santa Barbara field and is considered a first-rate prospect.

According to the report the Atlantic is obliged to drill four wells before March 31, 1947. The company has done no previous drilling in the country, and may have difficulty in getting started, in view of restrictions with respect to drilling equipment for wildcat tests in Venezuela and other foreign countries.

Mene Grande Operating 12 Rigs in Venezuela Fields

Mene Grande Oil Corporation (Gulf) is operating 12 rigs in drilling up proved and semi-proved acreages in the East and West Guara fields of the Greater Oficina area, in central Anzoategui, eastern Venezuela. At the end of August the company had 40 producing wells in the two fields, which lie between the Oficina field proper and the Leona field. Eight producers have been added since the end of July. The two fields have been under development since 1942, although most of the wells have been drilled since the first of this year. Completion depths in the area range from 6500 to 7500 feet in a multiple pay zone, and most of the wells are brought in as dual or triple completion jobs. They average approximately 400 barrels each per day in initial production, although current production from the two fields is running about 27,000 barrels daily of pipe line deliveries.

Mene Grande is also drilling three wells in the Santa Barbara-Mulata field (Monagas). In the Oficina field the company is performing a workover job on one of its wells and is drilling two holes. In the Pando area, Mene Grande is nearing completion depth with a wildcat. It is almost midway between the Oficina field and the Areo area, where one of the newest fields has been discovered but not developed for commercial production. Other non-shipping fields in the Greater Oficina area include Merey, Yopales and Socororo.

Mercedes Field Has Five Producers but No Outlet

Asociadades Petroleos de Mercedes, a Venezuelan company jointly controlled by The Texas Company and Caracas Petroleum Company, is developing its Mercedes field in Guarico province, although no facilities are yet available for moving oil out of the producing area.

As of September 1 the field had 5 producing wells from 7 completions, and well No. 8 was drilling at 3200 feet. Production is being found in a thick Oligocene sand, ranging from 4300 to 4800 feet. All five producing wells so far brought in at Mercedes are shut in pending greater development and decision as to whether or not a pipeline is to be put in. The field is about 100 miles south and east of Caracas.

Russia's Kuban Oil Area To Be Restored In 1945

Russia's Kuban oil area in which all installations were destroyed, is expected to be in production by the middle of 1945, according to reports reaching the Department of Commerce.

Before the war the district yielded 3,000,000 tons of petroleum, providing employment for 20,000 workers. The installations were so thoroughly destroyed that the Germans were unable to obtain any petroleum during their occupation.

Crude petroleum from the Kuban area, with the exception of the Taman region, is reported to contain 52 percent light fractions and yield the highest percentage of gasoline of any Soviet crude petroleums.

Soldiers Questioned in Britain Gasoline Theft

A number of British soldiers have been sent home from Normandy for questioning in the theft of 20,000 gallons of gasoline from a military supply dump in northern England. The theft was discovered when civilians in the area were found to have the military gasoline in their possession, still in army tins. Further investigation showed the tins were removed from the center of a large pile without disturbing the outside tiers.

Amerada Holds 200,000 Acres in Venezuela

Holdings of Amerada Petroleum Corporation in Venezuela amount to almost 200,000 acres, and comprise the only foreign properties of the firm. They are held by the non-operating subsidiary, Esperanza Petroleum Company, as protection blocks in four areas. No geological or geophysical exploration of the properties has yet been made, and none is contemplated. The blocks are held on long-term rental basis without drilling commitments.

Largest of the Esperanza blocks, amounting to 100,000 acres, is in the western part of Barinas state. In Maturin Monagas and Sucre the company has several parcels aggregating 6000 acres within a short distance of the Quiriquire field, south of Caripito. In extreme northwestern Anzoategui, between the Rio Unare and the Miranda boundary, the company controls the rights on about 90,000 acres. Several parcels totalling approximately 1000 acres, are held in Zulia, adjacent to the Rio Limon, west of the Gulf of Venezuela and about 60 miles north of Lake Maracaibo. Nearest production is in the La Paz field.

Standard of California Announces Foreign Setup

All of Standard Oil Company of California's wholly-owned properties in foreign countries, hereafter will be operated by a single subsidiary, Richmond Petroleum Company of California. This company formerly was used by Standard in connection with Mexican properties which were expropriated. The company's chief holdings to be operated by Richmond are in Colombia and Venezuela.

Headquarters of the subsidiary are in San Francisco. Directors are: H. D. Collier, chairman; R. C. Stoner, president; Norman Hardy, vice president and general manager; Palmer Beckwith, vice president; R. G. Follis and B. W. Letcher. H. A. McGurty is secretary and treasurer and A. S. Palmer, manager of operations.

Richmond to Drill Wildcat On Colombia Holdings

Richmond Petroleum Company of Colombia is preparing to drill a wildcat in its Caraballo tract on the crest of a prominent surface anticline that traverses the 45,000 hectare property.

The concession is approximately 60 kilometers southeast of Baranquila, in Magdalena state.

Richmond has abandoned its second well in the El Retiro tract, also in Magdalena, immediately south of Shell Oil Company's Dificil tract. The well is reported to have been halted at only 1300 feet, far short of the Oligocene pay objective of the region.

☆

G. F. KAUFMAN has been transferred from Creole Petroleum Company, Caracas, where he was chief geophysicist, to Standard Oil Company of Cuba, Havana.

U. S. Field Operations

Oklahoma

Another Ordovician Pool Opened in McClain County

After perforating with 19 shots at 8208-13 feet in the Wilcox sand, The Carter Oil Company's Johnson 1, C SW SE 30-8n-2w, wildcat 3½ miles west of Noble, McClain County, flowed at the rate of 100 barrels of 37-gravity oil an hour through ¼-inch bottom hole tubing choke. The discovery is the second Ordovician pool opened on the west flank of the Nemaha Ridge. Carter has a large lease spread in the area as have other major companies. Because of the expense of drilling the deep holes, estimated at about $150,000 per well, it may be a major-company play from now on. Another Carter wildcat in McClain County claiming attention is Lamar 1, C NE SW 28-8n-3w, north of Cole, drilling below 8375 feet. In the new Washington pool Carter staked McBride 1, C NE SW 9-7n-3w, south of the Cottingham 1, section 7, and Oklahoma's deepest producer.

Logan County: Phillips Petroleum Company opened a pool east of the Lovell field when its Greene 1, C SE NW 36-18n-4w, swabbed 267 barrels of oil an hour on initial test from Layton sand. Producing interval shot with 150 quarts is 4806-55 feet with casing set at 4770 feet.

Atoka County: In the Boggy Depot area, Wakefield & Palmer, Tulsa, landed 8-inch casing at 2606 feet in Zweigel 1, SE SW NW 18-3s-10e, a cabletool wildcat, and are drilling below 2808 feet. Steep formations caused trouble in keeping a straight hole. West of Stringtown on the Chocktaw Fault trend, Northern Ordnance, Incorporated's Fulton Ranch 1, SE SW SW 19-1s-12e, was drilling below 5700 feet in shale.

West Moore: Mid-Continent Petroleum Company has a good Hunton lime well in its Harris 1-B, NE NE NW 32-10n-3w, which flowed 550 barrels of oil in 17 hours after it was acidized with 1500 gallons. It is a south offset to the pool's discovery well in the Wilcox. The Harris well tested dry in the Wilcox and was plugged back to complete in the Hunton at 8010-60 feet. Thus it appears Wilcox pay in the area is confined to section 29, on which 8 wells may be drilled.

West Edmond: Three completions boosted the field's list of producers to 138. Completions included Sohio Petroleum Company's Barber 1, C NE NE 8-13n-4w, south end of the pool, which flowed 406 barrels of oil in 4 hours through tubing choke from 6860-6940 feet; Magnolia Petroleum Company's Motter Heirs 1, C NW SW 16-13n-4w, extreme south line of the field, which flowed 600 barrels of oil in 8 hours through 1-inch tubing choke from 6916-98 feet; Phillips Petroleum Company's Bluff 1-D, C NE SW 16-14n-4w, north side of the pool, which flowed 290 barrels of oil in 4 hours through 1-inch choke from 6647-6715 feet. All are in Oklahoma County. In Canadian County, Stanolind Oil and Gas Company et al's Drake 1, C NE NE 13-4n-5w, was at 7080 feet with casing set at 7076 feet, waiting to test.

Garvin County: East of the East Pauls Valley area Sinclair Prairie Oil Company's Alred 1, NE NW SE 20-3n-3e, a pool opener, continued testing in the Pennsylvanian. Drilled to 1909 feet, it was deepened 10 feet and swabbed 31 barrels of oil, no water, in 3 hours.

Carter County: The Texas Company stepped out a quarter southwest of production in the new Lone Grove pool when it staked Reynolds 1, NW SE SW 5-5s-1w, and while the test missed several of the Pennsylvanian sands found in the Duke 1, it hit at 4035-56 feet, where drill-stem test recovered gas in 4 minutes, oil in 25 minutes to flow an estimated 60 barrels an hour with more than half a million feet of gas. Testing in the Reynolds and Duke wells continues.

Bryan County: Two miles southwest of Durant, Magnolia Petroleum Company abandoned its State 1, SW NE SW 6-7s-9e at 5308 feet. Springer shale was topped at 1165 feet and cores cut at 5300-08, total depth, showed the well was still in the shale. Cores showed a 70-degree dip in the formation.

Kansas

Pools Opened in Pratt; Wildcat Activity Gains

Skelly Oil Company gave Pratt County two oil pools as state wildcat operations totaled 91 as compared with 65 at this time last year. Seven miles southwest of the Chitwood area, Skelly Oil Company's Schaw 1, NWc 4-29s-13w, was completed with physical potential of 142 barrels of oil daily from Simpson sand topped at 4490 feet. After shooting with 20 quarts of 4489-99 feet, the well swabbed 30 barrels of oil in 15 hours. Second Pratt County discovery for Skely is Shriver 1, NEc 33-29s-14w, 3 miles southwest of the Coats pool, which was being cleaned out after shooting with 15 quarts at 4559-63 feet. It initially tested 200 barrels of oil in 24 hours from Simpson sand topped at 4555 feet.

Ellis County: Sunray Oil Company continues testing its Orth 1, NE NE SW 2-14s-20w, pool opener six miles northwest of the Kraus pool. It topped Reagan sand at 3836 feet and swabbed 162 barrels of oil in 9 hours. Depth is 3852 feet. Sunray is moving in for Orth 2, NE NW SW, Sec. 2.

Barton County: Vickers et al have a

Wells Completed in the United States in Week Ended Sept. 16, 1944

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	1				1		1		1	2	3	1	25	2
Arizona													6	2
Arkansas	1				1						1	3	162	182
California	42	3			45			1	2	3	48	50	1,458	990
Colorado									1	1	1		19	21
Florida													1	1
Georgia												1	5	2
Illinois	27	1		11	39		2		6	8	47	51	1,403	1,236
Indiana	7	1		2	10				2	2	12	9	221	185
Iowa													2	3
Kansas	24				24				10	10	34	34	1,268	175
Kentucky	13			2	15		3		3	6	21	21	541	250
Louisiana	19	2		7	28				3	3	31	14	542	442
North Louisiana	2	1		5	8				2	2	10	8	193	196
South Louisiana	17	1		2	20				1	1	21	6	349	246
Michigan	2	3		3	8				3	3	11	12	459	400
Mississippi	2			3	5		1		4	5	10	3	133	65
Missouri	1			1	2				3	3	5		31	19
Montana	8	2			10			1		1	11		247	160
Nebraska													7	33
New Mexico	5			1	6				1	1	7	8	289	178
New York	15		10		25						25	25	884	846
Ohio	4	9		7	20						20	5	656	611
Oklahoma	19	2	1		22				11	11	33	27	1,214	959
Pennsylvania	32	6	27	1	66						66	54	2,105	1,773
Tennessee													9	6
Texas	48	3		24	75		3		25	28	103	123		2,880
E. Tex. Bor. Co.'s				1	1						1	1	24	16
E. Texas Field													3	5
Rest of E. Texas									3	3	3	13	206	161
North Texas	11			7	18				8	8	26	26	995	699
W. Central Tex.	1			1	2				2	2	4	14	292	265
West Texas	20			4	24						24	31	1,128	630
Tex. Panhandle	3			1	4						4	4	152	142
G. Coast, Upper	2	1		3	6				3	3	9	13	401	226
G. Coast, Lower	7	2		4	13		3		7	10	23	8	677	437
Southwest Texas	4			3	7	1			2	2	10	9	322	258
S. Central Texas												4	78	41
Utah													1	
West Virginia	1	17		2	20						20	22	646	446
Wyoming	4				4		1		3	4	8		122	90
Total U. S.	284	51	38	71	446	1	11	2	78	91	538	473	17,275	12,957

* Includes distillate wells. † Includes salt water disposal wells.

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possible pool opener in Workman 1, NEc 33-20s-12w, and casing has been set at 3408 feet to test Arbuckle lime topped at 3410 feet and cored to 3414 feet where returns showed saturation. The wildcat is 2 miles southwest of the Silica pool. Sohio Oil Company's Lang 1, NE NE 36-16s-13w, Reif pool, was given a potential of 112 barrels daily from Lansing-Kansas City lime, and in the Ainsworth pool Armer et al's Marquis-Johnston 1, NW NW 32-16s-13w, was given a potential of 162 barrels daily from Arbuckle lime.

Rush County: Sunray Oil Company was rigging cable tools to clean out its Jacobs 1, SW SW NW 3-16s-19w, possible pool opener 5 miles northeast of the Penny-Wann pool, where it recovered several Reagan sand cores with spotted stains and strong oil odor. Sand was topped at 3622 feet and oil shows were reported to 3642 feet.

Stanton County: A west extension to the Hugoton pool seems imminent as Stanolind Oil & Gas Company's Col-Mac 1, center of 32-30s-39w, encountered good gas shows in a section from 2400 to 2436 feet, believed to be the Winfield lime. Cores from 2436-90 and from 2460-65 feet also showed gas.

Sedgwick County: Wentworth et al's Sautter 1, pool opener ¾ mile northwest of Clearwater, continues testing after producing 109 barrels of oil and 34 of water in 12 hours from Lansing lime at 3011-16 feet.

Tarkio Dry Hole Among Failures in Missouri

Four dry holes including 3 wildacts and one in the Tarkio pool were reported in Missouri. The Tarkio pool failure was Cities Service Oil Company's Rankin 1, NE SE NE 31-65n-39w, abandoned at 1474 feet after testing salt water.

Atchison County: In the Tarkio pool Cities Service Oil Company completed Watkins 4, SE SW NW 32-65n-39w, pumping 60 barrels of oil and 44 barrels of water from Bartlesville sand at 1426-38 feet.

Wildcat failures included Short's Griffin 1, NW NW 15-65n-40w, Atchison County, abandoned at 1447 feet; Todd et al's Mabe 1, W½ SE 28-55n-29w, Caldwell County, abandoned at 1364 feet, and Miller et al's Moss 1, NWc 4-59n-37w, Holt County, abandoned at 2179 feet.

Landon Holdings Bought By The Texas Company

The Texas Company has purchased Kansas oil properties owned by former Governor A. M. Landon of Kansas including leases in Butler, Reno, Stafford and several other counties as well as about 500 barrels daily of flush production. Principle item of the deal are the three producing leases in the Zenith pool of Stafford and Reno counties. Two other producing leases are located in Butler County.

Indian Land Bids Asked

Sealed bids for oil and gas leases on restricted Indian lands of members of the Five Civilized Tribes will be held at Muskogee, Oklahoma, October 17. Tracts are in the following counties: Washington, Creek, Okmulgee, Okfuskee, Hughes, Pittsburg, Seminole, Pontotoc, Garvin, McClain, Carter, Love, Murray and Grady.

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Ever Take a Good Look at the Anatomy of Cameron's Type "WM"

Triple Seal

Casing Head?

Here is *defense in depth* against pressure equalization between casing strings. It is a combination of the Cameron Type "W" Resilient Seal and Type "WM" Test-Weld Flange which, together, provide a triple seal between casing strings.

The Type "W" Resilient Seal, unlike seals of this general design, employs socket head cap screws which screw directly into the top of the slips to compress the resilient seal ring. Thus, the conventional screw type packing gland, with its threads exposed to the drilling tools, is eliminated and higher packing compression is obtained.

The Type "WM" Test-Weld Flange provides a repackable plastic packing seal above the Type "W" Seal with provision for introducing hydraulic test pressure between the two seals. Finaly, a welded seal may be applied between the Type "WM" Test-Weld Flange ond the casing.

Complete details will gladly be sent to interested operators upon request.

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New Mexico

Lea County Well Prepared For Test After Shows

Humble Oil & Gas Company's No. 1 Federal Leonard Oil Company, Ordovician test in southeast Lea County, was preparing for a fourth drill-stem test after shows of both oil and gas at 11,712 feet. Three other tests failed because the packer was not holding. The well cored to 11,716 feet and recovered black shale and green sand with no visible stain or odor of oil. Location is in 12-26s-37e, 7½ miles north of the discovery well in the Kermit Ellenburger field, Winkler County, Texas.

Humble's Federal-Keinath 1, 11,000-foot test in 8-21s-38e, is drilling below 7494 in lime. A sharp break was reported from 7412-74 feet, with some gas and a good show of oil.

Continental Oil Company was changing bits in its Skaggs 2-B-23, wildcat east of Monument. This test is scheduled to go to 11,000 feet and is in 23-20s-37e. Depth is 9444 feet.

Maljamar Oil & Gas Company has completed its No. 11-B, Baish, for 107 barrels during 3-hour flow through open 2-inch. Pay was topped at 3678 feet, and the well logged showing of oil and gas at 4724-33 feet. The oil increased at 3753-65 feet and the hole filled 1000 feet. Water was encountered to the total depth of 4139 feet. The hole was plugged back to 4118 feet, shot with 200 quarts at 4055-4107 feet, shot with 300 quarts at 3795-3875 feet, and 240 quarts at 3677-3753 feet.

Devonian Oil Company's State 1, prospective westward extension to the Vacuum pool, is being placed on the pump after treatment with a total of 7000 gallons of acid. Five and one-half inch casing was set at 4665 feet. Total depth is 4729 feet, in lime.

Eddy County: Aston & Fair No. 8-B Stevens, 25-17s-30e, is good for 25 barrels of oil with an equal amount of water, through 2-inch casing at 3343 feet from pay topped at 3335 feet. Depth is 3346 feet.

North Texas

New Pool in Prospect Southwest of Muenster

Logging a 12-foot section of conglomerate which showed oil, Kadane-Griffith Oil Company's S. B. Hopkins 1, in Cooke County, appears a prospective pool opener, 6 miles southwest of Muenster.

The show was logged at 2971-83 feet, total depth. Electric log was run and 7-inch casing set at 2969 feet. A 30-minute drill-stem test from 2970-83 feet showed gas within five minutes, and recovered 1800 feet of oil and 90 feet of oil-cut mud. Bottom-hole pressure was 1500 pounds, with 300 pounds flowing pressure. The test is scheduled for 3000 feet. The well is 330 feet from the northwest corner of Section 18, BBB&C Railway Survey, Abstract 150 with nearest production, the Dangle pool, 1¼ miles north by east.

Archer County: Fortex Oil Corporation et al have abandoned Mattie H. Ingersoll 1, 7 miles south of Mankins, at 1710 feet. A show of oil was logged in sand from 1650-58 feet but after electric log was run, the well was abandoned. Fortex has made location for another test 7 miles southeast of Archer City, in Lula Ikard Heirs 1, projected to 1100 feet.

Five miles southeast of Archer City, King and Petre have abandoned Threet 1. This test logged Gunsite lime at 1059-62 feet, dry sand, 1093-96 feet, a small show of oil from 1096-99 feet, but bailed salt water. Total depth was 1159 feet, in shale and shells.

Consolidated Oil Company et al, logged Marble Falls lime saturated with oil in H. O. Prideaux 1, wildcat 17 miles southeast of Archer City, in the J. Saunders Survey. The core was from 4768-90, and 4781-90. After a drill-stem test, it was decided to drill ahead.

Jack County: Hanlon-Buchanan's C. M. Matlock 1, 5 miles southwest of Jacksboro, logged a show of oil from 2866-2872, and is drilling below 3195 feet. The test is scheduled for 6000 feet, and is located in A. H. Latimer Survey, Abstract 363.

Clay County: Nixon Petroleum Company's H. W. Perkins 1, 2½ miles northwest of Petrolia, was abandoned in hard, limy sand, with no show at 1845 feet. The same company has made location for a 1300-foot test, its T. J. Wells Estate 2, 2½ miles south of Charlie, 1200 feet from the north line and 2100 feet from the west line of block 32, Bacon's subdivision.

Three miles south of Bellevue, Stanolind Oil and Gas Company will start work on a 7500-foot wildcat, C. A. Gray 1, 440 feet from the south and east lines of the north half of Section 2801, TE&L Company Survey, Abstract 531.

Montague County: Continental Oil Company has resumed drilling in McNutt 1, 2 miles southwest of Bowie. The well tested 300 feet of oil and 30 feet of salt water on a drill-stem test at 6744-55 feet in lime tentatively identified as Viola. At 7003-7013 feet a sand was cored which had a stain and strong odor of oil, identified as the Simpson sand. The test is headed for 8000 feet.

Roeser & Pendleton have set pipe to complete Hall 1, southeast outpost in the Hildreth pool and a producer is said to be assured.

King County: Shamrock Oil & Gas Company's R. B. Masterson 1, wildcat was preparing for another try at a drill-stem test after four failures. Conglomerate with odor of oil at 6173-6181 feet was encountered. Two feet of conglomerate showing oil and three feet of black shale were recovered. The hole is now being conditioned for another test, with total depth at 6186 feet, in lime. This prospect is 10 miles north of the Bateman area, which is noted for good production in the 5300-foot conglomerate zone.

Stephens County: Humble Oil & Refining Company is preparing to plug back from bottom, 4871 feet, to test the Caddo lime zone around 4200 feet, in its W. H. Green 1-B, wildcat discovery prospect 10 miles northwest of Breckenridge in the James Commer survey No. 13.

☆

S. Z. NATCHER has been named assistant manager of the public relations department of Standard Oil Company of California.

West Texas

Pecos County Well Looks Like New Pool Opener

Standard Oil Company of Texas was completing its MacDer Company 1-3, northeastern Pecos County, for a producer and new pool opener, from the Wolfcamp, basal Permian Lime. Total depth is 5374 feet, in granite. It was plugged back to 5020 feet and flowed 71 barrels during a 39½-hour test, through a ⅜-inch choke, on two-inch tubing, from perforations between 4900-60 feet and 4981-86 feet. Gravity of the oil is 37.3, and gas-oil ratio is 921-1.

MacDer 1-3 has elevation of 3002 feet. It topped the Wolfcamp at 4914 feet, was deepened to 5374 feet in granite, cemented 5½-inch casing at 5370 feet and showed heavy gas in perforating the lower horizons. On a previous test, the well blew out as a wet gasser, resulting in the death of three members of the crew. Three and one-half miles east of the well are two other gassers from the Wolfcamp.

Humble Oil & Refining Company's No. 1 State National Bank of El Paso, trustee on the W. W. Turney block, north central Pecos County, also tested the Wolfcamp, swabbing oil into the pits for 20 hours at the rate of 3 barrels per hour. The oil was cut 30 percent by drilling mud and 10 percent by drilling water. Total depth of the hole is 5463 feet, and testing is from perforations between 5425 and 5445 feet. The well is 6 miles southeast of the Heiner Ellenburger field, and 8 miles west of Baldridge.

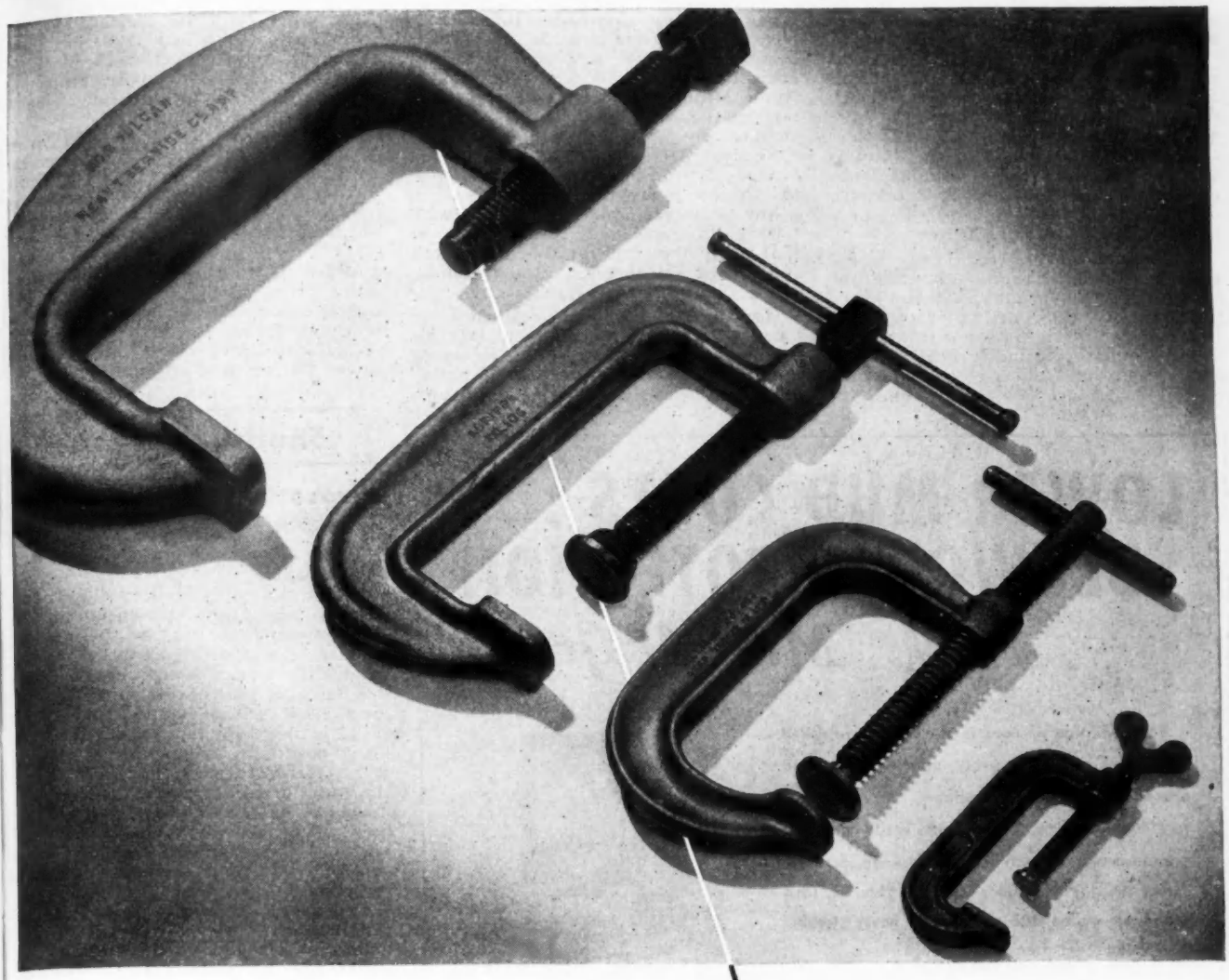
In the Trees Ranch Area, Standard of Texas is rigging up and drilling a water well for a Permian test in Bonebrake et al 1.

Andrews County: In the Mascho Field, Standard Oil Company's Columbus Gray 22-1, was swabbing to test from perforations at 4424-62 feet, with 120 shots and 500 gallons of acid. From perforations at 4331-98 feet, the well tested 37 barrels from 3 hours and 25 minutes swabbing. Standard has location for another test in this area, also one well milling tubing at 4176 feet, and another standing, preparing to install a pumping unit.

The Texas Company's 1-L University, prospective Holt lime pay well, recovered 7 feet of dolomite from the first core at 5375-87 feet, with a trace of oil, but no porosity. The well previously had yielded 2900 feet of oil and gas-cut mud on a 60-minute drill stem test from 5300-75 feet, a showing considered ample to make a commercial well. Best saturation was from 5325-50 feet. The test is located on the east flank of the Emma field, and is drilling below 5390 feet.

Champlin Refining Company's University 1-B, wildcat 5 miles northwest of the Embar pool, showed oil from lime cored at 7960-80 feet. A second core was taken from 7980-94 feet and recovered four feet of dense, crystalline dolomite and some chert, with oil stains in the bottom 4 inches. The well is drilling ahead below 8095 feet, in red shale and green pyritic shale with streaks of lime and a few quartz grains, classified by some as likely to be Detrital.

Magnolia Petroleum Company's test



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southeast of the Fullerton field was drilling below 3285 feet in anhydrite.

Crockett County: Sohio Oil Company has staked location for a wildcat, 5½ miles southwest of the Todd Deep field and 4 miles southeast of the Shannon Permian lime pool, 27 feet south and 168 feet east of the John I. and P. D. Moore's No. 1 Douglas Todd which was abandoned at 2502 because of an unsuccessful fishing job. The proposed test will go to 7500 feet.

Yoakum County: The Texas Company has made location for a 7500-foot test in the Wasson pool, 2200 feet from the south and east lines of Section 861, Block D., John H. Gibson Survey. The Texas Company formerly held the original lease, but subleased the oil and gas rights above 5500 feet to The Atlantic Refining Company. Below 5500 feet, rights were retained by The Texas Company, and the new well is to test horizons below 5500 feet. The well is Annie Miller 100. Nearest deep production in the Wasson district is 4 miles southeast.

Skelly Oil Company's wildcat, W. S. Hodges 1, in Section 446, Block D. J. H. Gibson Survey, is drilling in lime below 5690 feet. After treating with 1500 gallons of acid, in dolomite, at 5361 feet, the well swabbed a small amount of oil through 2-inch tubing, and a small amount of salt water.

Howard County: Ray Albauth of Lamesa, has contracted with Duncan drilling Company to drill a 5000-foot test on a 10,000-acre block 12 miles north of Big Spring. The well, Albaugh No. 1 Fee, will be located 660 feet from the east line and 1980 feet from the north lines of Section 29, Block 32, township 2-N, T&P survey. Protection acreage has been acquired by a number of larger oil companies.

Hudspeth County: Jones & Ernest No. 1 Mowry, wildcat 12 miles northwest of Salt Flats, Section 36, block 70, township 2-S, T&P survey, showed gas bubbles believed to be near the base of the Mississippian, at 3837 feet, and is drilling in calcareous brown shale.

Ward County: Gulf Oil Corporation's Edwards B-2-T cored at 4510-30 feet and recovered 20 feet of lime with scattered fine porosity, bleeding oil. A second core from 4530-50 recovered the same. Coring was continuing.

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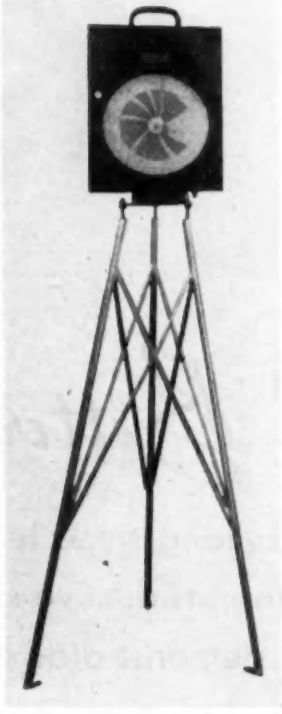

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2. Indicates graphically any heavy or light streaks.
3. Eliminates guess-work in use of weighting material, chemicals and water.
4. Shows the duration and the relative amount of gas in gassy streaks in the mud.
5. Enables the crews to know when they can pull a dry string of drill pipe.
6. Indicates drilling speed, and time required for all other drilling operations.
7. Shows the time of a complete circulation.
8. Indicates approximately how often the hole is filled up when making a trip.
9. Gives to the tool pusher or crew coming on tour a graphic picture of preceding operations.

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Southwest Texas

Lavaca County Test Rated Possible Pool Opener

Moran Gas Company's Joe W. Lell et al 1, which may open an oil field 4½ miles southwest of Hallettsville, Lavaca County, was awaiting cement late last week after squeezing off perforations at 5914-17 feet, where it made the first production test. The well showed some oil, but also showed too much gas and an attempt is being made to reduce the ratio before completing in the same horizon. Before making the production test, a drill stem test had been run in the same perforations, reported to have flowed 7 barrels of 42-gravity oil per hour using ¼-inch chokes at top and bottom, and showing working pressure of 1100 pounds. Depth is 7690 feet, to which it had been drilled by Jack W. Frazier when a bad fishing job developed and the lower part of the hole was junked, 5½-inch casing being set to 5930 feet. Moran took the well over and perforated for tests.

A new gas field is being added in Lavaca County by Sterling Oil & Refining Company's Mary Hoffman 1, which drilled to 9003 feet, set casing at 7828 feet, and perforated between 7710-55 feet in Wilcox sand for a production test Wednesday night. It was reported making gas with possibly some distillate, no estimate having been made as to volume. It is 12 miles southeast of Yoakum.

Live Oak County: Henderson Coquat's L. A. Reagan 3, wildcat a mile south of Oakville, has set casing on bottom at 6959 feet, where it will make production tests of sands which showed some oil on drill stem tests. Some salt water was recovered, but operators may be able to make a well. One test at 5937½-40 feet showed 10 feet of 46.7-gravity distillate with 500 pounds working pressure in 44 minutes, while the next test at 6940-47 feet showed more gas and distillate. Latest test, at 6956-59 feet, total depth, showed 100 feet of oil and 100 feet of salt water with 325 pounds pressure.

Goliad County: Amerada Petroleum Corporation's Ada G. McFadden 1, wildcat 12 miles west of Goliad, is drilling below 9497 feet after showing considerable gas and some distillate on drill stem tests above 9000 feet. On a test at 8944-87 feet, using ¼-inch chokes, it made estimated 7,000,000 cubic feet of gas daily and recovered 90 feet of oil and 800 feet of salt water at the end of the test. A later test at

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8972-87 feet showed 2300 pounds working pressure and recovered 900 feet of gas-cut mud, no salt water.

In the James Cunningham Survey, 10 miles northwest of Goliad, Barnsdall Oil Company's Alvin Metz 1 is drilling below 7050 feet.

McMullen County: Edwin M. Jones' Harry Ezzell C-4, 2723 feet southwest of the discovery well for the new San Caja Carrizo-Wilcox field, topped gas sand at 6458 feet and made a drill stem test at 6469-77 feet, showing 600 pounds pressure in 30 minutes and flowed gas through a ¼-inch choke. Recovery was 60 feet of condensate-cut mud and some brackish water. It is now coring ahead.

Jim Wells County: The Tijerina field has been extended 1000 feet to the east by The Texas Company's H. C. de Tijerina 5 which flowed 252 barrels of 40.5-gravity oil daily through a ⅛-inch choke from perforations at 7126-32 feet.

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IN THE 1943-44

COMPOSITE CATALOG

Blanco Oil Company and Al Buchanan have made location for an 8000-foot wildcat 5 miles northwest of Falfurrias in the Los Olmos & Loma Blanca Ignacia de la Pena grant, scheduled to start at once.

Refugio County: P. R. Rutherford's Smith-Crow 1, 8 miles south of Woodsboro, was preparing to complete production test following a drill stem test with perforations at 4563-65 feet, where it recovered 1900 feet of oil with working pressure 28 pounds.

Lift Gasoline Curbs After Nazis Lose, Oil Man Urges

The American people are being hoodwinked if government restrictions on petroleum distribution are not lifted within 30 days after the end of the European war, Maston Nixon of Corpus Christi, Texas, president of the Texas Midcontinent Oil and Gas Association, has declared.

"With our present 19,000,000,000-barrel reserve, we will have more oil in reserve at the end of the war than we had at the beginning," he said.

Nixon supported his statement concerning the removal of gasoline restrictions with figures showing that the petroleum industry is prepared "to supply the requirements for carrying on the Pacific war with one hand tied behind its back."

BE SURE TO CHECK . . . .

Trading Post Section

ON PAGE 83 OF THIS ISSUE

Because of the scarcity of certain types of new equipment and the fact that some operators may have a surplus of some items and a serious shortage of others, this **Used Equipment Forum** is performing a valuable service to operators in locating needed used materials or disposing of surpluses that may be needed by others.

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Texas Gulf Coast

Field Being Opened in Northern Harris County

A new oil field is being opened in northern Harris County by Eltex, Limited & Danciger Oil & Refining Company's Bender Estate 1, southeast of Spring. Late in the week it was flowing into the pits, making pipe-line oil, but operators were awaiting erection of storage tanks before taking a definite gauge. Flow has been estimated at from 200 to 400 barrels daily through a 10/64-inch choke with tubing pressure about 250 pounds. Gravity is 38 degrees. Production is from Cockfield sand with casing perforated with 12 shots at 6244-47 feet, bottom of the hole. This well is in an area which has attracted considerable prospecting in the past.

In the Joyce Richardson Field, O. W. Killam's Rorick 2, west side of the field, has been dual-completed through perforations at 6914-20 feet and at 7135-41 feet, the lower sand being the one opened earlier this year by General Crude Oil Company in extending the field westward. Potential test showed a flow of 24 barrels of 54-gravity condensate daily from the upper sand, gas-oil ratio 125,000-1, and a flow of 80 barrels of 40-gravity crude through a 13/64-inch choke from the lower sand, with tubing pressure 2250 pounds and gas-oil ratio 20,201-1. Total depth is 7377 feet.

Wharton County: Humble Oil & Refining Company's Duncan B-2, Hungerford Area, is being plugged after failure to show oil in commercial quantities from the Cockfield sand at 7289-7306 feet. Casing had been set after drilling to 7250 feet, and perforated at 7289-95 feet, but swabbing recovered salt water. This test, a mile north of the shallow Spanish Camp gas field which produces from Frio at about 3500 feet, is the most recent of several which have been drilled in the area and recorded showings enough in the Cockfield sand to warrant setting casing, but none have produced.

General Crude Oil Company has made location for its Security Bank & Trust Company 2, S. Castleman Survey in south central part of the county, 4 miles southwest of Lane City. It is scheduled to 5500 feet for a test of Frio sands producing at Magnet-Withers field.

Fort Bend County: Following completion of its Hurta 1, opening pay southwest of previous production in the Needville field, British American Oil Producing Company has made location for Hurta et al 3 as a west outpost to the field, scheduled to 6750 feet, which should test all of the sands found to date, plus another 200 feet.

Gulf Oil Corporation's Invincible Oil Company 10 will be a new southwest flank test at Blue Ridge field, 665 feet south of Gulf's Invincible 9, abandoned.

Chambers County: Glenn McCarthy et al's Wiebelhaus 1, important deep test east of Sun's North Winnie discovery and northwest of the Stowell Field, tested through perforations at 10,482-492 feet, below the level of any production in the area. Indications were that it would produce gas and distillate at that depth, but operators are drilling on below 10,750 feet.

East Texas

Prospective Pool Opener In Basal Trinity Reported

Humble Oil & Refining Company is drilling below 8242 feet in its Nichols 1, prospective pool opener from the basal Trinity, Hopkins County. Two weeks ago the well logged sufficient oil saturation and porosity in the top of the Rodessa series at 7869-95 feet to assure a new oil field in this, the Pickton area.

Sun Oil Company spudded L. E. Turner 1, 8000 feet northeast of Nichols 1, to fulfill a lease obligation, but the well is shut down.

Panola County: Arkansas, Louisiana Gas Company's L. Hudson 1, Block 6, Commonwealth Survey, was coring below 5880 feet in lime. Previous cores, one from 5792-5811, recovered 14 feet, of which 10 feet was dark brittle shale and 4 feet of hard, Oolitic limestone with no odor or taste. The other, from 5811-5831, recovered 13 feet of lime and shale, tight and hard.

In its C. T. Cummins 1, N. Ivey Survey, 8 miles northeast of Carthage, Arkansas-Louisiana Gas Company gauged 15,000,000 feet of gas per day along with an unestimated amount of distillate, on a drill-stem test from the Hill section at 4997-5015 feet. Bottom hole pressure was 2100 pounds.

Skelly Oil Company has extended the Carthage field 10 miles west with completion of Houston Wills 1, M. A. Romero survey, for an estimated 20,000,000 to 25,000,000 cubic feet of gas per day. Perforations were made in the upper Pettit horizon from 6165-85 feet. Operators plan to treat Upper Pettit and perforate Lower Pettit before taking final gauge.

Skelly Oil Company's No. 1 Houston Wills, M. A. Romero Survey, wildcat 10 miles southeast of Carthage, has run an electric test at 7006 feet and is awaiting cement. The test showed Travis Peak topped at 6535 feet.

Southern Production Company's No. 1 A. C. Soape, 4 miles north of Carthage, J. N. Williams survey, is drilling below 6480, in lime, unchanged. A core at 5907-42 feet recovered 3 feet, of which 1 foot showed soft gray Oolitic lime with a gas odor, 2 feet of porous Foss Oolitic lime with slight gas odor and distillate taste. Another core from 6064-76 feet recovered 12 feet showing good porosity.

Sabine County: Coline Oil Company's Temple Lumber Company 1, wildcat in Larkin Groce survey, is drilling below 8733 feet in lime.

Shelby County: After running an electric survey, Ce-Beth Oil Company has shut in No. 1 J. M. Smith at 6940 feet in red shale, and is awaiting orders.

Harrison County: Stanolind Oil and Gas Company and Continental Oil Company are finishing derrick for joint test in the Gray Survey, 8 miles northeast of Marshall, near Woodlawn.

Rogers Lacy is drilling below 5600 feet in his Verhalen 1, Aaron Poe Survey, wildcat near Scottsville.

☆

JOE ALLISON, formerly of Okmulgee, Oklahoma, has become store manager for Jones & Laughlin Supply Company at Carmi, Illinois.

Fine Steel Products

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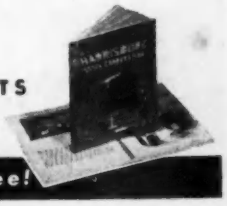
Some of the products we build to your specifications are: Seamless Steel Cylinders, Couplings, Pump Liners and Liquefiers, Drop Forgings, Drop-Forged Steel Flanges, Coils and Bends, Alloy and Carbon Steels.



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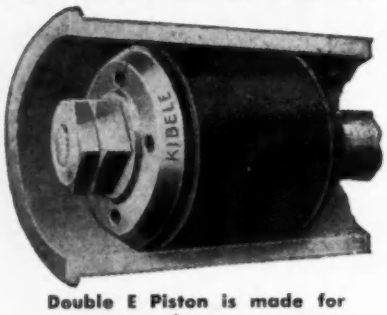

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South Louisiana

Cankton Field Receives Westward Extension

Cankton field, St. Landry Parish, was extended westward by Danciger Oil & Refining Company's Alice Cormier Prejean 1, first well for the company in this field, which came in flowing at the rate of 478 barrels in 24 hours through a 10/64-inch choke with tubing pressure and casing pressure equalized at 1725 pounds. Casing was perforated in regular discovery pay at 9688-9704 feet after drilling to 9727 feet. Operators are preparing to spud Pothier 1, north of the Prejean 1.

Sun Oil Company's Domengeaux 1, Cankton field, is drilling at 9277 feet in shale and lime, now within about 400 feet of the expected pay zone which should be reached some time over the weekend.

The Texas Company's J. B. Ferguson 1, Krotz Springs area, is drilling below 9400 feet in shale.

Acadia Parish: Union Sulphur Company's Gueno 3, testing a deeper sand for the Branch field is still awaiting special equipment to be installed before trying for a production test. Casing had been perforated at 11,085-090 feet but pressures started building up so fast when the test was first started that it was thought advisable to take all precautions.

St. Mary Parish: A new producer, the first in several months for the Charenton field, has been added on the southeast side of the producing area by Fifteen Oil Company, which completed its South Coast Corporation 6 through perforations at 6737-40 feet, flowing potential test of 226 barrels daily through a 9/64-inch choke with tubing pressure 1075 pounds. Total depth is 7250 feet.

Vermilion Parish: Union Oil Company of California has extended the West White Lake field more than ½ mile northwest of its State-White Lake A-2 from total depth of 10,750 feet as a dual-completion with producing horizons more than 3350 feet apart. Upper sand was perforated at 7322-28 feet and lower sand at 10,684-688 feet, and production from both pays has been shut in with no gauge taken. However, it produces oil from both sands although the lower sand is a high gas-oil ratio producer. The company is drilling surface formations in its State-White Lake B-1, located slightly more than ½ mile southeast of the discovery well, same field.

Iberia Parish: Shell Oil Company has announced location for a wildcat, Smith-State 1, to be drilled in 13-14s-6e, going to 12,000 feet in an area north of the Weeks Island salt dome. The Pure Oil Company is drilling Trahan 1 northwest of New Iberia in 9-12s-6e, below 7300 feet.

North Louisiana

Lincoln County Gas Field May Be Opened by Wildcat

The California Company was scheduled to rip casing at 9272-9305 feet in Jessie Mae Norris 1, C NW NE 15-18n-1w, preparatory to testing sand with good showing of gas. The wildcat may open a new gas or gas-distillate field in Lincoln Parish. A previous attempt to perforate was unsuccessful. Total depth of hole is 9768 feet, with 5½-inch liner cemented at 9727 feet. First perforations at 9498-9513 feet made 3000 feet of salt water.

Bossier Parish: Barnsdall Oil Company's J. T. Hanks 1, NW SE 7-20n-12w, logged broken sand with no show of oil or porosity from 8340-8422 feet in the Cotton Valley horizon topped at 7554 feet. Lime showing oil was logged at 4788-98 feet, Travis Peak at 5635 feet; sand with slight show of oil and salty taste was cored at 6576-86 feet; Cotton Valley was logged at 7554 feet. The well will go to 8800 if necessary.

Franklin Parish: C. L. Smith et al will begin operations soon at J. B. Ely 1, C SE SE 25-13n-7e, 6 miles southeast of Winnsboro, which will go to 7100 feet in Tuscaloosa. Smith abandoned W. H. Bates 1, C NW SW 18-12n-8e, 3 miles south of the new location, at 7513 feet in the Lower Cretaceous, topped at 6986 feet.

Claiborne Parish: Gulf Refining Corporation and Houston Oil Company recovered 1600 feet of salt water and 4 joints of mud on a drill-stem test of perforations at 4915-20 feet in Muslow Oil Company 1, 31-21n-3w, deep test, Homer field. Hole was drilled to total depth of 6884 feet in salt and casing cemented at 5100 feet to test upper horizons.

De Soto Parish: Southern Production Company, Inc., completed P. G. R. Bell et al 1, SE C 35-12n-16w, Logansport-Joaquin field, for a 60,000,000-foot gasser per day. Production was natural from pay at 4862-77 feet.

Southeastern

Third Producing Area Is Opened in Alabama

Alabama's third producing area was opened last week by H. L. Hunt's W. S. Scruggs 1, C SE NE 32-11n-4w, Choctaw County, where Hunt already has 2 oil fields. The well is pumping 50 barrels of 19-gravity oil and 3 barrels of salt water per 24 hours from the Eutaw at 3460-3501 feet, with a total depth of 3832 feet. Scruggs 1 is 2½ miles northwest of Gilbertown production, and there is a possibility that it is on the same structure, but for the present it is being classified as a discovery. Last week Hunt completed Robert Land 2, C SW NE 36-11n-5w, from 2832-38 feet, 4 miles west of Gilbertown. Hunt is drilling below 5200 feet in J. M. Boney 1, 36-11n-5w, Gilbertown sector.

Escambia County: Another wildcat failure reported as Hunt Oil Company abandoned S. Foshee and Miller Mill Company 1, 15-1n-10e, after going to total depth of 5846 feet, without show of oil. The company is spudding in Harry B. Jones, Trustee 1, C SE SE 3-1n-11e.

Washington County: The Texas Company is moving in at N. S. Stallworth & Company, C SW NW 10-3n-3w, in the Deep Park area. The test is contracted for 8300 feet.

Florida

Humble Oil & Refining Company is drilling in lime at Florida's deepest test, Gulf Coast Realties 2, C SW SE 30-48s-30e, Collier County. The well has gone to 13,330 feet without obtaining shows of commercial value.

Humble's State 1, C NE SW 30-55s-

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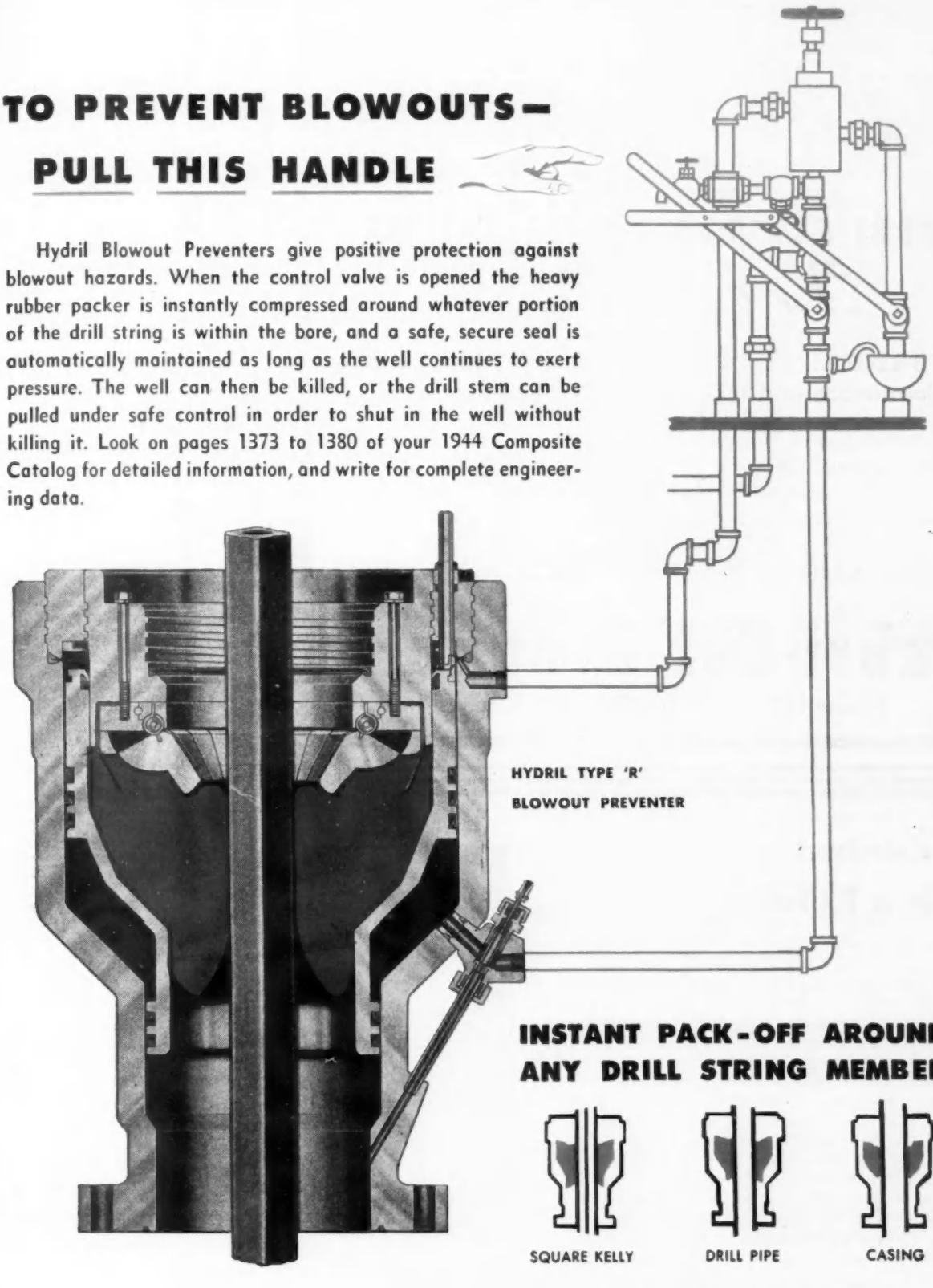

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36e, Dade County, is drilling at 6300 feet in chalk and lime.

Pure Oil Company's C. C. Hopkins 1, Dade County wildcat C SW NE 21-6s-9e, is drilling in shale at 2132 feet.

Stanolind Oil & Gas Company's St. Joe Paper Company 1, C NE NE 15-2s-2e, Leon County, is drilling at 500 feet.

Mississippi

The Pure Oil Company's McDowell 2, in 12-6n-3w, Adams County, did not perforate after drilling plugs from the 7-inch casing set at 10,290 feet, but deepened to 10,293 feet and ran a drill stem test on the 3 feet of open hole. It produced gas at the rate of 3,000,000 feet daily along with 24 barrels of distillate daily, but showed 2 joints of salt water in the bottom of the drill pipe when tool was pulled. It is now drilling at 10,335 feet.

In the Cranfield field, The California Company has set casing in 2 more wells after coring the Tuscaloosa pay, and doubtless will add two producers to the field. The company's Higgenbotham 1, in 52-7n-1w, reported oil showings at 10,377-435 feet and set casing at 10,466 feet after going to 10,467 feet.

Claiborne County: The first deep wildcat for Claiborne County has been announced by Sohio Petroleum Company, which will drill its Georgiana Mackey 1, in 4-10n-3e, southern tip of the county, just north of the Jefferson County line, and will test the Tuscaloosa zone.

Jefferson Davis County: Sid W. Richardson's C. E. Berry 1, which recently opened a gas-distillate field in 24-9n-19w, and has been shut in for lack of outlet, has been gauged at 54 barrels of distillate daily through a ¼-inch choke from upper perforations at 7855-80 feet, along with lots of gas, and flowed 33 barrels of distillate with ratio 117,210 to 1, from the lower perforations at 8075-8105 feet.

Georgia

Hunt Oil Company is awaiting cement at Superior Pine Products Company 1, land lot 363, Land district 13, after setting 10-inch casing at 190 feet. This Echols County wildcat will test to 9500 feet.

The California Company is moving in material for Brunswick Peninsula 1, 625 from the south line and 2499 feet from west line of land lot 7 in Wayne County.

Arkansas

R. H. Crow may have opened a shallow oil field 6 miles southeast of El Dorado as a pumping unit set on Root 1, C NE NE 25-18s-15w, is making 50 barrels of oil per day with no show of formation water. The well was drilled by Crescent Drilling Company sometime ago and failed in the Smackover. It was taken over by Root Petroleum Company as a test of the Nacatoch sand, but efforts to complete for commercial production failed. The hole was abandoned, and a bull plug placed in top of casing with a valve. It began to leak around casing and made heads of oil when the valve was opened. It was therefore put on pump. Crow will drill Randolph Smith 1, NE NE NE 26-18s-15w.

Rocky Mountain Area

Gebo Field Is Proven for Production in Tensleep

Continental Oil Company's Gebo Unit 2, SW SE NW 23-44n-95w, has proven the Gebo field, Hot Springs County, Wyoming, for Tensleep production. It was drilled to 5103 feet and 7-inch production string cemented at 5093 feet. Top of the Tensleep was reached at 4887 feet. On 8½-hour test, it flowed 454 barrels of oil, ranging from 23 to 26 gravity.

Pilot Butte Field: The Pilot Butte field, Fremont County, Wyoming, which produces oil from the Tensleep sand, appears

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The Contest Needs a Referee

Collier's for September 16th has an interesting editorial. Wishful thinking aside, it predicts, we will continue to have government-run enterprise (socialism) right along with private enterprise (capitalism). Collier's wants unfair advantages stripped from government-run enterprise. Otherwise, it says, "All that will be proved will be the already known fact that a crooked gambler using marked cards can usually take an honest player's shirt." Your September 16th Collier's is still around—read this editorial, entitled "Fair Play in the Middle Way." We doubt if even a "heavily advantaged" government-run supply house could proselyte men who TRY PELCO FIRST, but the fight needs a referee for the sake of a war-engrossed nation on the brink of domestic disaster.

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to have production in the Sundance sand in British-American's Tribal 3-E, NE NE NW 5-3n-1w. The well will be drilled in with cable tools, having been drilled with rotary to its total depth of 5199 feet. The Sundance was topped at 5183 feet and a drill-stem test at 5186-5199 feet, open 1 hour, showed 1386 feet of fluid, 80 percent oil. The Pilot Butte field is northeast of the northern end of the Shoshone anticline.

Little Dome: Superior Oil Company's second test of the Little Dome structure in Fremont County, Wyoming, Tribal 1-A, NW SE SE 10-5n-1w, was abandoned after drilling to 4150 feet in the Chugwater formation. The first test of this structure was abandoned several months ago in the Tensleep at 4081 feet.

Lost Soldier: Sinclair-Wyoming Oil Company's Tropic 1, SE SW SW 34-27n-90w, which was to test the productive limits of the Tensleep sand on the northwest flank of the Lost Soldier field, Fremont and Sweetwater Counties, Wyoming, found the Dakota, top at 4918 feet, dry and has been abandoned at 4948 feet. It is located on the Fremont County side ¾ mile northwest of production.

California

Gas Discovery Recorded In Kings Alpaugh Area

Standard Oil Company's Cutter Unit 1, 29-23-22, Alpaugh area, was good for 11,000,000 cubic feet of gas through a 36/64-inch choke from a plugged depth of 3510. The well is in Kings County, 6 miles northwest of the Trico Gas field.

Shell Oil Company's Solano County gas test, Lambie 1, 25-5n-1w, Kirby Hills area, blew out while running casing for a test but was brought under control and cemented 5½-inch casing for test. Estimates of the flow were from 10,000,000 to 20,000,000 cubic feet. Depth is 2617 feet.

Wildcats were announced in Ventura County, Kings County, Tulare County, Solano County, and two in Kern County.

Kern County: Reserve Oil and Gas Company 33-7, 33-11n-19w, cored pay sand at 2629 feet and continued to 2705 feet in solid oil sand, where a production test will be made. The well is in the Tejon Ranch area west of the Richfield Oil Corporation's holdings where few successes and many failures are of record.

Standard Oil Company's K.C.L. 20-13, 5-31-25, in the Coles Levee field, is drilling at 14,884 feet in hard shale. This is the second deepest well drilled in the state. Continental Oil Company's K.C.L. A-2, 8-27-24, near Wasco, holds the record at 15,004 feet.

Amerada Petroleum Corporation S.P. 33-15, 15-29-29, its second well in the newly discovered area, was wet on a production test and has been suspended. Rotary is being moved to 37-15, same section.

Los Angeles: City of Inglewood has granted a permit to Cornelius G. Willis for a wildcat test on the Simons brick yard property, NW 28-2s-14w, a mile northwest of the Potrero field.

Barnsdall Oil Company's Sunny Hills 2, 22-3-10, southeast of the discovery well and midway between East Coyote

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and West Coyote fields, is coring at 6223 feet in oil sand. A total of 270 feet of oil sand has been logged from 5632-6223 feet.

General Petroleum Corporation's Heath 1, 34-3-11, deep wildcat test near Buena Park, has failed to indicate it will be much more than a pumper. After swabbing two days the fluid level stood at 8000 feet and consisted of 75 percent oil and 25 percent mud and water. The interval open to production is from 11,000 feet to 11,420 feet.

Solano County: Amerada Petroleum Corporation is moving in Sorenson 1, SE SE 19-6n-3e, 3½ miles southeast of Starkey Fee 1, discovery well in the Dixon area. The company has several thousand acres under lease and will attempt to determine the extent of the field with outpost wells.

Michigan

Gas Reserve Indicated In Michigan Stray Sand

Neil Wagenaar's Lane 1, NE NW NW, 3-14n-10w, Mecosta County, gauged 2,000,000 feet of gas in the Michigan Stray sand at 1208-19 feet, pointing to a new shallow gas reserve in the basin. Located between Goodwell and Austin fields, the wildcat will be carried to 3900 on original plan to test Dundee and Monroe formations.

Genesee County: Clyde Palmer's Davidson 1, NE NE SE 6-9n-8e, Forest Township, pumped an estimated 40 to 60 barrels of oil daily on 3-day test after acid treatment, pointing to the first commercial well for the area in the Dundee formation. The well showed 250 feet of oil natural at 2493-2501 feet. It is ½ mile north of an old 1900-foot Traverse lime well.

Thumb Area: Shell Oil Company's F. Weiden 1, wildcat in NWc 16-13n-11e, near Cass City, found the lower dolomite of the Detroit river at 3150-3152 feet with a show of oil, and the main Detroit zone at 3455-3464 feet. On drill-stem test at 3439-3457 feet, open 80 minutes, it yielded 10 feet of green oil, 110 feet of oil and gas-cut mud and then rotary mud.

Record Lease Price

Rowmor Corporation and C. W. Teater jointly paid a $54,000 record bonus for a straight ⅞ths lease on the NE NW, 14-19n-3e, Arenac County, in a state auction of 35,476 acres by the Michigan Conservation Department. It diagonally offsets a producing lease in the North Adams field but was leased under usual wildcat terms because of the non-uniform producing conditions found in the district.

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WESTERN CANADA

Commercial Producer from Devonian Is Indicated

With brief tests indicating probable commercial oil production from the Devonian Limestone, the California-Standard Company's Princess - C.P.R. 8 has completed drilling at 3983 feet, and set 7-inch casing to 3965 feet, at the top of an 18-foot porous, oil-saturated section. Plug will be drilled, and the well placed on test. The well, in the Princess Area 100 miles east of Calgary on the Alberta Plains, may become the first commercial producer from the Devonian on the Canadian Plains.

After halting at 3983 feet, the company set packer at 3937 feet, and made a drill-stem test. Rate of flow for 90 minutes was estimated at 45 barrels per hour, with gas flow 600,000 feet per day. The fluid recovery appeared to be water-free oil of about 35-gravity. The well is located in lsd 16 21-20-12w4th, ¼ mile west of the Princess-C.P.R. 1, drilled in 1939, and lost due to mechanical difficulties.

Major-Taber 3, West Taber test completed 25 feet in Taber sand at 3245 feet, was placed on flow test, with a flush oil yield which fluctuated between 5 and 15 barrels hourly, and settled to about 2½ barrels hourly. A bottom-hole choke is being installed in an effort to boost potential above the current indicated 60 barrels per day. It is located in lsd 14 9-9-17w4th, ⅜ mile northeast of the Major-Taber 1 discovery well. The latter, 4 feet higher structurally than No. 3, is flowing 35 barrels daily.

☆

HOWARD E. ISHAM has been named assistant vice president of the United States Steel Corporation of Delaware. He will continue as assistant treasurer.

WINFIELD GIVENS, former district engineer for Sun Oil Company in the Dallas area and later chief engineer in Venezuela, has been named head of the firm's new land department in Philadelphia, which represents a consolidation of several departments and divisions.

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Trading Post Section, THE OIL WEEKLY
P. O. Box 2608 — Houston 1, Texas

ROPE

CONSERVATION NOTE BOOK—

PAGE 9
SPLICES NOT KNOTS
Use a splice instead of a knot wherever you can, for a splice is much stronger than a knot. It is the strongest way to join two rope ends. Learn how to splice and you will learn how to save rope. Many short pieces of rope can be made useful when spliced together—splices can make a worthwhile, strong and usable length of rope.
For instructions on how to splice, and further information on treatment of rope, write for booklet, "Care and Conservation of Rope".

NEW BEDFORD CORDAGE CO.
233 BROADWAY • NEW YORK, N. Y.
Mills: New Bedford, Massachusetts

5988

HOTEL PHILADELPHIAN
formerly
HOTEL PENNSYLVANIA

DANIEL CRAWFORD, JR., Mgr.
39th and CHESTNUT STREETS
PHILADELPHIA, PENNSYLVANIA

Our courteous and competent staff will give you the utmost in friendliness, comfort and service. Conveniently located to all stations, and only five minutes away from the heart of the business section.

600 ROOMS
Each with bath from $3.00 up

RADIOS IN EVERY ROOM

Lounge and Restaurants
Unrestricted Parking to 3 a.m.

U. S. Exploratory Completions

ALABAMA WILDCATS

Choctaw County Oil Discovery: H. L. Hunt's Robert Land 2, c sw ne 36-11n-5w, perf 24 shots 2832-38 ft, pump 50 bbls 18-gr oil, 35 bbls sw, td 5280 ft, pb 2800 ft.

Lamar County—Failure: Stanolind's Jack Woods A-1, c ne se 23-14s-15w, elev 416 ft, Pottsville 325 ft, show est 750,000 gas, Pennington 2275 ft, show est 6 mln gas at 2420-22 ft, abnd 3170 ft.

CALIFORNIA WILDCATS

Kern County—Failure: Barnsdall Oil Co.'s Barlow 1, nw nw 24-28-28, Shark Tooth area, Vedder wet, abnd 2402 ft.

Solano County — Discovery: Amerada's Starkey Fee 1, c sw 2-6-2, 12 mi n Rio Vista gas field, flow 22,570,000 gas, 7/8-in, perf 4550-4600 ft sand in Eocene est equivalent Hamilton zone in Rio Vista, td 9434 ft.

Ventura County—Failure: Standard's Bowman 2-1, se sw 14-4-18, abnd 7988 ft.

COLORADO WILDCAT

Garfield County — Failure: Wasatch Prod. Co.'s Clough 1, c nw se 22-6s-94w, Webster Hill, abnd 3600 ft.

ILLINOIS WILDCATS

Clark County—Failure: Wright's Hight 1, nw ne 32-9n-14w, abnd 2570 ft.

Clay County — Oil Discoveries: Magnolia's Rinnert 1, ne ne ne 33-4n-8e, pump 32 bbls, Cyp 2690-2700 ft, td 2716 ft.

Pure's Chaffin 1-C, sw sw sw 1-2n-8e, pump 113 bbls, McCl 2970-73, 2979-83 ft, td 3110 ft.

Franklin County—Failure: Schlafly et al's Baldwin Hrs 1, ne se nw 32-5s-3e, abnd 3018 ft.

Jasper County—Failures: So. Indiana O&G's Swank 1, ne ne ne 21-6n-10e, abnd 2894 ft.

Central Pipe Line's Sowers 1, sw sw sw 7-8n-9e, abnd 2870 ft.

Jefferson County—Failure: Shell's Davis 1, nw ne ne 23-4s-3e, abnd 3187 ft.

Richland County—Failure: Kiowa Drlg.'s Betebenner 1, se nw se 6-3n-10e, abnd 3138 ft.

INDIANA WILDCATS

Dubois County — Failure: Texas Co.'s Bheueesn 1, nw nw se 35-3s-5w, abnd 3801 ft.

Posey County—Failure: Ryan Oil's Reich 1, se sw ne 27-5s-12w, abnd 2728 ft.

KANSAS WILDCATS

Butler County — Failure: Bennett et al's Whiteside 1, c w½ ne 20-25s-4e, Miss 2541 ft, Vl 2722 ft, abnd 2752 ft.

Ellis County—Failure: Bridgeport's Morkey 1, sec. 17-14s-20w, Arb 3816 ft, abnd 3860 ft.

Graham County—Failure: Texas Co.'s Voss 1, sw sw se 9-6s-21w, Lans 3492 ft, Arb 3794 ft, abnd 3832 ft.

Harvey County—Failure: Wolf Creek et al's Schrag 1, nwc sw, 5-22s-2w, Arb 3174 ft, abnd 3220 ft.

Osborne County — Failure: Harbar Drlg.'s Union Central Life 1, sec 15-6s-15w, Arb 4155 ft, abnd 4180 ft.

Ottawa County—Failure: Phillips' Cather 1, Lans 2055 ft, Miss 2688 ft, Simp 3485 ft, Arb 3580 ft, abnd 3630 ft.

Pratt County—Failure: Transwestern's Strait 1, ne ne sw 28-26s-13w, Lans 3778 ft, Simp 4340 ft, Arb 4412 ft, abnd 4446 ft.

Rawlins County—Failure: Sinclair Prairie's Robbins 1, swc ne 32-4s-35w, abnd 5219 ft.

Sedgwick County—Failure: Adair et al's Mattson 1, sw sw nw 7-26s-2e, base KC 2725 ft, Miss 3039 ft, abnd 3075 ft.

Sumner County — Failure: Continental et al's Proud 1, nw nw nw 10-31s-1w, Arb 4136 ft, abnd 4158 ft.

KENTUCKY WILDCATS

Breckinridge County—Failure: Bullock et al's Thompson 1, 13-P-35, abnd 1000 ft.

Daviess County — Failure: Miller et al's Goerns 1, 21-O-27, abnd 1988 ft.

Daviess County—Failure: Ellis' Donovan 1, 19-Q-27, abnd 1884 ft.

Union County—Oil Discoveries: Trans-Tex et al's Culver 1, 12-P-20, pump 13 bbls, O'H 2523-26 ft, td 2710 ft.

Texas Co.'s Culver 1, 12-P-20, pump 13 bbls fr O'Hara at 2522-26 ft, td 2710 ft.

Webster County: E. Clay Pool Oil Discovery: Carl Sneff's Page 1, 9-L-21, pump 124 bbls fr Penn at 1003-26 ft, td 1026 ft.

NORTH LOUISIANA WILDCATS

Morehouse Parish — Failure: Texas Co.'s Louisville Cooperage Co. 2, 1320 s 660 w of nec 36-23n-8e, elev 104 ft, Wilcox 1552 ft, Cotton Valley 2826 ft, Smackover 4714 ft, abnd 4917 ft.

Sabine Parish—Failure: Lyons & Prentiss' Louisiana Long Leaf Lbr. Co. 2, 560 e 660 n of swc ne se 23-6n-13w, elev 260 ft, abnd 3640 ft.

SOUTH LOUISIANA WILDCAT

Orleans Parish—Failure: W. T. Burton's State-Lease 318-10, 2500 n 10,750 w of nec 10-11s-14e, Lake Ponchartrain area, shut down several months, tem abnd 2080 ft in shale.

MICHIGAN WILDCATS

Arenac County—Failure: Sun's Tolgo 1, ne se ne 16-20n-7e, Dundee 3247 ft, abnd 3462 ft.

Missaukee County—Failure: Pure's Boven 1, s½ se ne 18-22n-6w, Dundee 3900 ft, abnd 4142 ft.

Van Buren County—Failure: C. A. Perry's Graham 1, nw ne nw 9-1s-13w, abnd 1408 ft.

MISSISSIPPI WILDCATS

Copiah County—Failure: Amerada's F. D. Barlow 1, 990 fr n&wl 2-10n-5e, elev 306 ft, Sparta 2045 ft, Wilcox 3583 ft, Selma 7890 ft, Eutaw 9030 ft, so 9725-50 ft, Lower Tuscaloosa 10,032 ft, abnd 10,218 ft in shale.

Jasper County—Failure: Southland Oil Co.'s M. W. Maske 1, c sw nw 14-3n-12e, elev 550 ft, Eutaw 4558 ft, Tuscaloosa 4995 ft, Massive 6053 ft, abnd 6164 ft.

Lincoln County — Oil Discovery: California Co.'s W. C. Douglas 1, c ne se 10-6n-8e, elev 455 ft, perf 240 shots 10,514-548 ft, flow 378 bbls 38-gr, 5/32-in tbg choke, td 10,641 ft.

Madison County—Failure: Carter Oil Co.'s Maude Castens 1, 660 fr sl 650 fr wl ne¼ 13-11n-3e, elev 344 ft, Wilcox 1225 ft, Midway 3210 ft, Selma 4052 ft, Eutaw 5025 ft, abnd 5270 ft.

Wayne County — Failure: Humble's GM& ORR B-1, 661 fr nl 1985 fr el 9-9n-9w, elev 370 ft, Marine Tuscaloosa 6240 ft, Lower Tuscaloosa 6418 ft, abnd 7210 ft.

MISSOURI WILDCATS

Atchison County—Failure: Short's Griffin 1, nw nw 15-65n-40w, abnd 1447 ft.

Caldwell County—Failure: Todd et al's Mabe 1, w½ se 28-55n-29w, abnd 1364 ft.

Holt County—Failure: Miller et al's Moss 1, nwc 4-59n-37w, Hunt 2141 ft, abnd 2179 ft.

MONTANA WILDCAT

Toole County—Gas Discovery: Husky Refining Co.'s Rankin 1, nw se se 8-36n-1e, Kicking Horse area, flow est 20 mln gas, Ellis Madison 2040 ft, td 2040 ft.

NEW MEXICO WILDCAT

Eddy County — Failure: Childress Royalty Co.'s State Brown 1, c ne nw 32-20s-26e, elev 3319 ft, abnd 2550 ft.

OKLAHOMA WILDCATS

Canadian County—Failure: Fox's Garten 1, se sw 26-14n-5w, Bois D'Arc 7260 ft, abnd 7360 ft.

Garvin County — Failures: Lundy et al's Meeks 1, nw nw nw 32-1n-1w, ns oil or gas, abnd 2504 ft.

Dixon et al's Freeman 1, sw ne ne 36-1n-1w, lime cong, abnd 1625 ft.

Grady County—Failure: Olsen Drlg.'s Pfile 1, sw ne ne 32-3n-7w, temp abnd 3322 ft.

Greer County—Failure: Thomasson's Sapplington 1, se se nw 10-6n-21w, Gr wash 322 ft, abnd 338 ft.

Lincoln County—Failure: MacMillan Producing Co.'s Healy 1, nw nw ne 14-15n-6e, Elev 2070 ft, Osw 2850 ft, Prue 2865 ft, Bart 3280 ft, abnd 3300 ft.

Noble County—Failure: Stanolind's Compton 1, sw sw se 6-24n-2w, abnd 4974 ft.

Okfuskee County—Failure: Phillips et al's Saran 1, nw nw ne 14-13n-7e, Prue 2633 ft, abnd 2805 ft.

Pontotoc County — Failure: Pennington's Breden 1, se se sw 6-2n-5e, abnd 2153 ft.

Pottawatomie County — Failure: Skelly's Billington 1, nw nw nw 17-6n-3e, abnd 4703 ft.

Stephens County—Failure: Magnolia's Finley-Duncan 1, ne ne sw 31-2s-4w, Arb 4749 ft, abnd 4874 ft.

WEST CENTRAL TEXAS WILDCATS

Jones County—Failures: Bell Oils' S. H. Beaty 2, 330 ft out swc of 255½-ac tr in se part sec 44, D&DA Lands, abnd 3414 ft.

Panhandle Ref. Co.'s Baker 2, 330 ft wel 760 ft nsl labor 5, Lge 125, DeWitt SCL, abnd 2925 ft.

SOUTHWEST TEXAS WILDCATS

Jim Hogg County—Failure: Stanolind's Mary E. Premont 1, (OWDD) 1980 fr el 660 fr sl LPIA&M Co. sur 178, on 320-ac tr out of 2480-ac lse on Sun Farmout, elev 536 ft, otd 4542 ft, wash and deepen, abnd 5002 ft.

Starr County—Failure: Sun's E. G. Esslinger 1, 1335 n at ra to RR 758 fr el 386-ac lse 2800 fr m/sly/nl 758 fr el Porc 94 tr 82, Pedro Longoria sur, elev 166 ft, abnd 5012 ft.

Zapata County — Failure: Phillips' Virginia Garcia 1, 221.7 fr nl lse 588 e of wl Virginia Garcia tr blk 16, 645.7-ac lse, Carralitos subdvn J. V. Borrego Gr lot 2, abnd 7296 ft.

LOWER TEXAS COAST WILDCATS

Bee County—Failure: W. Earl Rowe's J. C. Beasley 1, 330 out of n cor 400-ac lse, Wm. Allen sur, abnd 4875 ft.

Fayette County — Failure: Phillips' Karl

Rietz 1, start swc 155-ac lse go 3500 e alg sl lse 330 n at ra to lcn, Jas. Robinson Lge, Cisternarea, elev 390 ft, abnd 3005 ft.

Goliad County — Failure: Guy E. Green et al's Sol Parks 1, 10,715 fr sl 4576 fr el 3400-ac lse 660 fr s&wl blk 7, Manuel de la Pena sur 31, Vicks 4400 ft, abnd 4685 ft.

Jackson County—Failure: Stewarts & Ralph A. Johnston's Frank Koop 1, 660 se of nwl 275-ac lse 530 s of Lavaca River, R. Musquez sur, abnd 7178 ft.

Jim Wells County—Failure: Jay Simmons' J. H. Austin 1, 660 fr s&el J. W. Fogg sur 12, abnd 5520 ft.

Live Oak County—Failure: Smith & Story's C. T. Griffin 1, 710 fr sel 330 fr swl of 142-ac lse 710 fr sel M. B. Kilvin sur, blew out and bridged, abnd 1950 ft.

Victoria County — S. Inez Oil Discovery: Lyons & Prentiss' Keeran Est. 1, 330 fr nw&swl 160-ac lse 2000 e of Nielsen's Kounty 1, sand 4750 ft, perf 24 shots 4754-58 ft, flow 111 bbls 29-gr, 3/64-in, td 7020 ft.

LOWER TEXAS COAST OUTPOSTS

Jackson County—Mayo Failure: Humble's C. Swanson et al 1, 467 fr se&swl 182-ac lse, Francis Menefee sur A-51, abnd 7655 ft.

San Patricio County—Gregory Extension: Humble's J. F. Green Est. 2, 633 fr el 4251 fr sl T. T. Williamson sur 42, 2640 n 30 deg 40 min e of Disc Green Est. 1, 2 mi se Gregory, sand 8496 ft, perf 15 shots 8503-05 ft, flow 77.11 bbls 43.9-gr oil, 0.1% wtr, 3/32-in, td 9502 ft.

LOWER TEXAS COAST NEW PAY TEST

Nueces County—Riverside Oil Discovery: Stanolind's George R. Clark 2, 545 s of nl 399 w of el of lot 39 J. V. L. de Herrera Gr, 302.7-ac lse, elev 15 ft, sand 6276 ft, perf 4 shots 6282-83 ft, flow 723.7 bbls 40-gr oil, 11% wtr, 13.75 bbls wtr, 7/64-in, td 6561 ft.

TEXAS GULF COAST WILDCATS

Jefferson County—Failure: Shell's McFaddin Tr E-1, 4900 fr nl 1200 fr el sect 354 H. Gentz sur A-706, 5120-ac lse, abnd 8198 ft.

Newton County—Failure: F. J. Anderson, Tr.'s Ethyl Hendrix et vir 1, 400 fr el 330 fr sl 40-ac tr, T&NO sur A-924 sect 4, elev 84 ft, abnd 9513 ft.

Wharton County—Failure: Texas Co.'s C. D. Bergstrom et al 1, 660 fr nl 1980 fr el of sect 37, abnd 5410 ft.

EAST TEXAS WILDCATS

Hunt County—Failure: P. B. Scott et al's Woodson 1, 900 ft nsl 8200 ft ewl of Shelby CSL sur, elev 548 ft, Austin chalk 1970-2140 ft, Woodbine 2588 ft, abnd 3308 ft.

Rusk County—Failure: John W. Merritt et al's Waggoner 1, 660 ft nsl 970 ft ewl of 100-ac tr, Thomas Dalby sur, elev 392 ft, abnd 3870 ft.

Wood County—Failure: Magnolia's McGee 1, 330 ft out nwc blk 40, Andres Gonzales sur A-223, elev 442 ft, Pecan 2468 ft, Austin 3925-4048 ft, Woodbine 4496 ft, Georgetown 5268 ft, Ft. Worth 5830 ft, Paluxy 6382 ft, Glen Rose 6733 ft, Massive anhydrite 7805-7994 ft, Pittsburg 8624 ft, abnd 9086 ft.

NORTH TEXAS WILDCATS

Archer County—Failure: Fortex Oil Corp.'s Ingersoll 1, 1840 ft snl 1350 ft wel S. P. Ry. sec 1, A-434, abnd 1710 ft.

Clay County—Failures: Bridwell Oil Co.'s Henderson 1, 1920 ft wel 100 ft snl of S. Hernandez sur A-185, abnd 1374 ft.

C. H. Featherston et al's Bevering 1, 150 ft out swc of A. H. Bevering-BBB&C Ry. sur A-367, abnd 1400 ft.

Collin County—Failure: Pure's Finley 1, 1641 ft wel 389 ft nsl of 2-90-ac of w 320-ac of Martha Herron sur, elev 757 ft, abnd 6010 ft.

Cooke County—Failure: Trumter Pet. Corp.'s Pace 1, 870 ft ewl 1200 ft snl of 322-ac tr, Thomas Cook sur A-258, Ellenburger 1486 ft, abnd 1551 ft.

Montague County — Failure: Glenn Grimes and Joe Schmitt's Barcus 1, 330 ft snl 990 ft ewl blk 78, Kaufman CSL, elev 916 ft, granite 4478 ft, abnd 4480 ft.

Wichita County—Failures: Akin-Dimock et al's Gibson 1, 200 ft wel 1000 ft nsl blk 271, Waggoner Colony Lands, abnd 2103 ft.

W. H. Spradling et al's Spradling 1, 150 ft out nec blk 306, Waggoner Colony Lands, abnd 1760 ft.

WYOMING WILDCATS

Carbon County — Failure: Stanolind's Union Pacific 1, ne se ne 19-18n-77w, Dakota 4913 ft, abnd 5000 ft.

Fremont County—Failure: Superior's Tribal A-1, nw se se 10-5n-1w, Little Dome area, abnd in Chugwater red beds 4150 ft.

WYOMING OUTPOST

Fremont County—Lost Soldier Failure: Sinclair Wyoming's Tropic 1, se sw sw 34-27n-90w, Dakota 4918 ft, abnd 4948 ft.

WYOMING NEW PAY TEST

Hot Springs County—Gebo Discovery. Continental's Gebo 3, sw se sw 23-44n-95w, flow 1309 bbls 26-gr fr Tensleep 4887 ft, td 5103 ft.

WESTERN CANADA WILDCATS

Saskatchewan—Radville: Norcanols Oil & Gas' Radville 2, lsd 16 36-5-19w2nd, abnd 5121 ft.

Central Alberta Plains — Viking: Imperial Oil-Anglo Canadian Oil's Imperial-Viking 3, lsd 3 29-45-12w4th, abnd 2938 ft.

United States Wildcat Starts

ARKANSAS

Hempstead County: Barnsdall's M. Cox 1, c w½ ne sw 2-14s-26w, lcn.

CALIFORNIA

Kern County: General Pet. Corp.'s Kernlandia 84-16, se nw 16-29-27, Fruitvale area, lcn.

Bender Drilling Co.'s Vedder 14-1, nw nw 14-28-28, Round Mountain area, rig.

Kings County: Southern Calif. Pet. Corp.'s Socal-Berger 88-32, se se 32-19-20, Stratford area, lcn.

Solano County: Amerada's Sorenson 1, se se 19-6-3, Dixon area, gas test, lcn.

Tulare County: L. B. Tannehill's Hunsaker 1, se se 17-23-27, Ducor area, lcn.

Ventura County: Lloyd Corp.'s Todd A, 6-1-21, Oxnard area, lcn.

GEORGIA

Echols County: Hunt Oil Co.'s Superior Pine Producing Co. 1, c Ld lot 363 Ld dist 13, lcn 9500-ft test.

ILLINOIS

Alexander County: Whitebread et al's Menton 2, sw sw se 4-15s-3w, dr 277 ft.

Clay County: Skelly's Johnson 1, sw sw ne 29-4n-7e, lcn.

Effingham County: Bonder et al's MacSmith 1, sw sw ne 33-9n-5e, lcn.

Hamilton County: Magnolia's Kaufman 1-A, se se nw 7-4s-6e, lcn.

Indiana Farm Bureau's Seymour 1, nw nw ne 33-6s-7e, dr 398 ft.

Jefferson County: Williams' Pierce 1, se sw se 6-2s-2e, lcn.

Perry County: Texas Co.'s Monti 1, sw sw sw 24-4s-4w, lcn.

Wayne County: Amisco Inc.'s Clay 1, nw nw se 16-1n-7e, dr 227 ft.

Dolly et al's Tooten 1, sw se se 5-1n-9e, lcn.

White County: Harsh et al's Kern 1, nw nw ne 33-4s-9e, lcn.

INDIANA

Gibson County: Lloyd's Knowles 1, se se nw 32-2s-11w, lcn.

Texas Co.'s Fed Farm Mortg 1, nw nw nw 33-3s-9w, lcn.

Greene County: Shell's Jones 1, ne ne nw 23-7n-4w, lcn.

Jasper County: Kankakee Valley Dev.'s State Bk of Rensselaer 1, ne se se 14-30n-6w, lcn.

Jay County: Farm Bureau's Binegar 2, ne ne nw 29-24n-13e, dr 117 ft.

Orange County: Bedford Dev.'s Brothers 1, nw sw se 19-3n-2w, lcn.

Posey County: Farm Bureau's Garris 1, ne se ne 4-5s-12w, lcn.

Rodgers Cartage Co.'s Deacon et al 1, se sw sw 25-7s-15w, lcn.

Sullivan County: Myers' Wisenor 2, ne nw 8-8n-10w, lcn.

Humphries' Gross 1, sw se 3-9n-10w, lcn.

Wabash County: Texas Co.'s Schultz 1, nw nw se 24-28n-6e, lcn.

KANSAS

Barton County: Bay Pet. Co.'s Steinert 1, sec sw 2-16s-15w, rig.

Virginia Dr. Co.'s Dietz 1, sec ne 4-18s-12w, lcn.

Clark County: Phillips' Birdsall 1, cnw se 24-31s-23w, lcn.

Decatur County: Sterling Drlg.'s Randall 1, ne sw 11-5s-27w, lcn.

Ellsworth County: Atlantic et al's Roth 1, nw sw se 9-17s-10w, lcn.

Finney County: Sinclair Prairie's Ely 1, nwc se 30-21s-28w, lcn.

Marion County: Westgate et al's Brown 1, nec sw 7-17s-3e, lcn.

McPherson County: Bay Pet.'s Decker 1, sec 11-20s-3w, lcn.

Rooks County: El Dorado Rfg.'s Bubbe 1, se nw se 20-7s-16w, mirt.

Rush County: Cities Service's Urban 1, swc nw 10-16s-17w, lcn.

Morton's Sehlitter 1, sw se ne 18-16s-17w, lcn.

Coralena's Brack 1, sw se 10-17s-16w, mirt.

Sedgwick County: Nelson Dr. Co.'s Brears 1, se sw se 5-26s-2e, lcn.

Sumner County: Bay Pet.'s Dennett 1, nec sw 23-33s-3w, lcn.

Soughland Rlty.'s Duck 1, ne nw nw 28-34s-1e, rur.

KENTUCKY

Daviess County: Teller's Smith 1, 16-N-28, lcn.

Owen's Bickett 1, 16-Q-20, lcn.

McLean County: Miller et al's Frey 1, 3-M-29, lcn.

MICHIGAN

Ottawa County: Rex Oil & Gas Co.'s Van Order 1, nw nw sw 14-5n-15w, rig.

Saginaw County: Mich. Producers & Refiner's Schmidt 1, c se se 1-13n-3e, lcn.

MISSISSIPPI

Hinds County: J. V. Canterbury's J. R. Ball 1, c nw se 7-5n-1w, lcn.

Lauderdale County: Rogers Lacy's J. D. Pickens 1, 660 fr nl 645 fr el nw ne 36-7n-17e, lcn 6000-ft test.

Marion County: Humble's A. Evans 1, c nw ne 15-2n-18w, clearing lcn.

NEW MEXICO

Eddy County: Martin Yates Jr. et al's State-Yates & McKee 1, c sw se 13-19s-29e, lcn.

OKLAHOMA

Cleveland County: California Co.'s Wilson 1, ne ne se 27-10n-1e, lcn.

Garvin County: Spears Drlg.'s Buttler 1, sw nw se 9-1n-1w, lcn.

Sinclair Prairie's Wright 1, se sw ne 20-3n-3e, td 445 ft, woc.

Greer County: Thomasson's Armstrong 2, nw nw ne 10-6n-21w, lcn.

Kingfisher County: Phillips et al's Hasley 1, se se 28-16n-5w, rig.

Lincoln County: Wilcox et al's Sewell 1, nw ne se 4-14n-6e, dr 1465 ft.

Pontotoc County: Cooper et al's Jacquess 1, sw nw se 34-4n-5e, rur.

Pottawatomie County: Texas Co.'s Vestal 1, nw nw se 28-6n-3e, c&p.

WEST TEXAS

Cochran County: Frank Griggs et al's L. R. Rampy 1, 440 ft out sec tr 8, subdvn V, sec 21, P. B. Penny sur, 2¾ mi n by e of prod, lcn 5000-ft test.

Honolulu Oil Corp.'s R. M. Hudson 1-9, 700 ft nsl 1866 ft ewl PSL 9, blk P, lcn San Andres test.

El Paso County: R. M. Magruder et al's Clem Sorley 2, 657 ft snl 1987 ft wel PSL 17, blk 5, lcn 3000-ft test.

Gaines County: J. F. Smith et al's Mrs. R. M. Dodge 1, c se sw D&W Ry. 36, blk H, lcn 5200-ft test.

Martin County: Gulf's University 1-MM, c ne ne sec 2, blk 7, lcn 5600-ft test.

Pecos County: General Crude Oil Co.'s H. L. Winfield 1, 2310 ft ewl 330 ft snl T. & St. L. Ry. 2, blk 132, lcn 3500-ft test.

Phillips' Manley 1, 660 ft out sec GH&SA 217, blk 10, lcn 5500-ft Delaware test.

Ward County: Standard of Texas' Durgin 1-X, (South Ward new pay test), c n¼ of s½ H&TC Ry. 15, blk 34, lcn 10,000-ft Ellenburger test.

WEST CENTRAL TEXAS

Taylor County: Great Lake Carbon Corp.'s W. E. Jones 1, 330 ft e of highway 330 ft nsl of 301-ac tr, Wm. Bishop sur No 3, lcn 2500-ft cable test.

SOUTHWEST TEXAS

Duval County: R. Thomas McDermott's Seferino Herrera 1, 330 fr e&wl 82-ac lse, sur 167, elev 790.8 ft, lcn 5000-ft test.

Webb County: Magnolia's Duval Rch-Lge 2, 330 fr swl 3035-ac lse, lot 9, Zapata County School Lands, League 2, lcn 3000-ft test.

Zapata County: John B. Hardwicke's 1, 1280-ac lse, sur 288, 48 mi sw of Hebbronville, elev 290 ft, lcn 2000-ft test.

LOWER TEXAS COAST

Fayette County: Phillips' Cora Cockrill 1, 2402 fr nl 330 fr el 539-ac lse Jas. Robinson sur, lcn 3000-ft test.

Jim Wells County: Blanco Oil-Al Buchanan's Eureka College 1, 467 fr s&wl of blk 3, 40-ac lse, Los Olmos & Loma Blanca Ignacia de la Pena Gr A-345, lcn 8000-ft test.

Refugio County: Hewit & Dougherty's Mrs. Jamie Hynes' B-1, 2000 fr sel 7377 fr swl 1500-ac lse, 21 mi n of Refugio, ru.

San Patricio County: W. Earl Rowe's J. E. Thompson et al 1, 660 fr nel 1600 fr nwl 260-ac lse, M. G. Frazier sur A-118 on Hickok & Reynolds farmout, mi and ru.

W. Earl Rowe-Monday Oil Co.'s J. E. Thompson et al 1, 1600 se of nwl 660 sw of nel 259.5-ac lse, M. G. Frazier sur, lcn 4750-ft test.

TEXAS GULF COAST

Chambers County: Gulf's Emma Barnhardt et al 1, 330 fr s&wl nw¼ sect 97 H&TG sur, Fir Ridge area, lcn 9500-ft test.

Ft. Bend County: L. H. Wentz's J. R. Farmer 1, 1650 fr el 330 fr nl I&GN sur A-353, 3.3 mi sw of Clodine, lcn 8300-ft test.

Westland Oil Co.'s R. M. Caldwell 1, 330 fr s&wl blk 2, W. S. Hal Lge A-31, blks 1 & 2, ¼-mi w Brazoria Co. line, lcn 8500-ft test.

Galveston County: Skelly's R. E. Paine 1, 467 fr nw&swl lot 3 of 171.1-ac lse, S. E.

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Whitney subdvn, blk E, Central Park subdvn, Sarah McKissick Lge, lcn 6500-ft test.

Montgomery County: O. C. Garvey's J. W. Wood 1, 601.3 fr nl 580 fr el 100-ac lse. W. Weir sur A-42, 4 mi nw Willis, elev 280 ft, lcn 8800-ft test.

Wharton County: S. G. Harrison's G. L. Schulze 1, 520 fr s&wl L. L. Miller sur A-527 and 160-ac lse, lcn 7150-ft test.

EAST TEXAS

Henderson County: Lone Star Producing Co.'s R. H. Lee 1, 660 ft out nec of 108¾-ac tr, or 660 ft wel 330 ft snl of B. C. Walters sur, mim for 10,000-ft Travis Peak test.

Texas Co.'s Geo. M. Morse 1, 660 ft nsl 330 ft wel of 300-ac tract, 2120 ft ewl 5150 ft snl of S. Calderon sur, lcn.

Hopkins County: Sun's L. E. Turner 1, 467 ft out swc of 152-ac lse, Antonio Lazarin sur, Pickton area, Travis Peak test, set surf pipe.

Van Zandt County: Texas Co.'s J. F. Stout 1, 660 ft out nwc of 170-ac tr, or 3050 ft ne of swl 1600 ft se of nwl of N. T. Dickerson sur, 2500 ft n by w of 9116-ft failure, lcn for Rodessa test.

NORTH TEXAS

Cooke County: Chester A. Martin et al's J. A. Wylie 2, 900 ft snl 330 ft wel of Thomas Cook sur A-258, lcn 1600-ft Ellenburger test.

Jack County: Northern Ordnance's W. Pettus 1, 330 ft out nwc of se¼ R. Murkerson sur A-442, sp on 5600-ft Ellenburger test.

Wilbarger County: Big Six Oil Co.'s Schlaffke-Morris 1-A, (new pay test Harold field), 760 ft nsl 737 ft wel H&TC Ry. 3, blk 14, lcn 6000-ft Ellenburger test.

WYOMING

Fremont County: Sinclair Wyoming's No. 1, ne ne ne 11-42n-107w, Dubois area, lcn.

WESTERN CANADA

South Alberta Plains—Eureka: California-Standard's Eureka-Province 1, se lsd 9 19-8-13w4th, ru.

Squeaks from the Bull Wheel

Get to the Point

"Is the hula dancer in her dressing room?"

"She's 'round at the rear."

"Yes, but is she in her dressing room?"

Trial and Error?

"How do you tell the ganders from the geese?"

"Oh, we don't bother about that. We just turn 'em loose together and let 'em figure it out for themselves."

Gyp, No Doubt

"They say that in Mexico you can get three pounds of sugar, a pound of coffee, a quart of whiskey and a wife for three dollars."

"I bet it's rotten whiskey."

Takes Time Sometimes

"I had to change my seat several times in the movies."

"Gracious, did a man get fresh with you?"

"Well, finally."

Rest in Peace

And then there was the fellow who went to the cemetery each year to mourn the death of his wife's first husband.

Out of His Line

"Lady, you'll have to pay full fare for that boy. He must be over twelve."

"How can he be over twelve when I've been married only ten years?"

"Listen, lady, I collect fares, not confessions."

Deceiver

"You say the defendant stole your money from your stocking? Then why didn't you resist?"

"Judge, how did I know he was after my money?"

Too Severe

As a drunk stood before the judge to be sentenced, his belt broke and his pants dropped.

"Take this man out and get some rope," the judge ordered.

Another prisoner whispered to his lawyer: "Gosh, they can't hang a man for that, can they?"

Last Words

Husband: "Can you guess where I've been?"

Wife: "I can, but go on with your story."

"These pills will give you the exercise you need."

And No Mistake

"But, Rastus, why do you call your cooties 'arithmetic bugs'?"

"'Cause dey add to my misery, subtract from my pleasure, divide my attention and multiply like the dickens."

Big Splash, Too

And then there was the fat woman who visited a shipyard. She bent over to tie her shoestring and before she could straighten up they broke a bottle of champagne over her stern and launched her.

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Notes for the Equipment Buyer and User

Portable Extinguisher

RANDOLPH LABORATORIES

Randolph Laboratories, 8 East Kinzie Street, Chicago, Illinois, have produced a 25-pound carbon dioxide fire extinguisher moved and operated with uninterrupted, single-sweep action.

The outfit features a palm-trigger valve mounted on the extinguisher's steel handle. By grasping the handle, the operator can move the unit and press the release button with one hand, discharging a blanket of carbon dioxide in an arc from 10 to 20 feet wide.

Release of pressure on the palm-trigger stops the flow of carbon dioxide.

The 5¾-foot horn-and-hose connection directs an accurate, full charge into the base of the flames, and keeps the operator at a safe distance from the heat of the fire. Mounted on hard rubber wheels, the unit is self-balanced.

Randolph Fire Extinguisher

Wickwire Spencer Company Makes Personnel Changes

Wickwire Spencer Steel Company, Buffalo 7, New York, announces that M. G. Werme has been appointed chief development engineer, Gordon Lloyd has been made superintendent of the Clinton plant, and Victor Chartner has been appointed chief mechanical engineer of the company.

Werme has been associated with Wickwire Spencer for 25 years. Lloyd was formerly power and fuel engineer for the Carnegie Illinois Steel Corporation and chief engineer of the Loftus Engineering Corporation. Chartner was previously with the Pittsburgh Steel Company as chief engineer.

Fairbanks, Morse Obtains Pomona Pump Firm Assets

Fairbanks, Morse & Company became the world's largest manufacturer of turbine pumps with the purchase of the Pomona Pump Company, a division of Joshua Hendy Iron Works, for $4,000,000. The Pomona firm had plants in Pomona, California, and St. Louis.

Arnold G. Brown, general sales manager of the Pomona company, has become assistant manager of the Fairbanks-Morse Pump Division in charge of Pomona and Westco products.

Hereafter the Pomona pumps will be known as the Fairbanks-Morse-Pomona and the Fairbanks-Morse-Westco line.

Sales Office Opened

The Guiberson Corporation, Dallas, announces formal opening of a sales office and warehouse at 4414 South Main Street, Houston. Glen T. Thornton is manager. Don Brock and Don Whittenberg, service engineers, will cover the territory served by the warehouse.

New Plant Planned

The Universal Packing and Gasket Company, Houston, plans a new office and plant to be erected when approval is obtained from WPB. The building is to be a one-story brick and hollow tile, 80 x 100 feet, costing approximately $32,000. The company manufactures oil field, refinery, and industrial mechanical packings and gaskets.

Charles E. Wilson Again Heads General Electric

Charles E. Wilson, former WPB vice chairman, has returned to General Electric Company as president and a director, positions he held for more than two years before he was called to Washington in 1942.

Wilson succeeds Gerard Swope, who came out of retirement to accept the post temporarily. Owen D. Young, also called from retirement to become chairman when Philip D. Reed resigned, also turned in his resignation.

No successor to Young was named. Reed, who relinquished the chairmanship in January, 1943, is now chief of the mission for economic affairs in London.

Concerning General Electric's affairs, Wilson said reconversion will be a difficult and costly proposition, since the firm is now devoted entirely to war work.

Lockett Officers Named

A. M. Lockett & Company, Limited, announces the election of the following officers: A. M. Lockett, chairman of the board of directors; Chas. C. Crawford, president and secretary; R. P. Lockett, vice president; and Jos. E. Viguerie, treasurer and assistant secretary.

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See Pages 2194 to 2211 in 1944 Composite Catalog

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W. E. KIPPER, sales manager of the Peoria division, Standard Oil Company (Indiana), has been promoted to assistant manager of the wholesale division at Kansas City, Missouri, succeeding the late N. W. Dawson. F. M. LeValley succeeds Kipper at Peoria.

LITTLETON C. BARKLEY, manager of the New York office of the Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., has been named sales manager of the Manhattan Mechanical Rubber Goods Sales Department, with offices at 120 Broadway, New York City.

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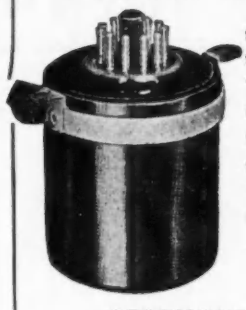

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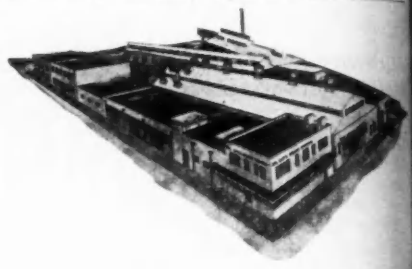

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